March 4, 2011

Kathleen Sebelius
Secretary
Department of Health and Human Services
Office of Consumer Information and Insurance Oversight
Room 445-G, Hubert H. Humphrey Building
200 Independence Avenue, SW
Washington, DC 20201

Re: Planning and Establishment of Consumer Operated and Oriented Plan Program; Request
        for Comments Regarding Provisions of Consumer Operated and Oriented Plan Program
        (File Code OCIIO–9983–NC.)

Dear Secretary Sebelius:

I. Introduction

On behalf of its physician and medical student members, the American Medical Association
(AMA) greatly appreciates this opportunity to provide comments in response to "Planning and
Establishment of Consumer Operated and Oriented Plan Program; Request for Comments
Regarding Provisions of Consumer Operated and Oriented Plan Program (Request)," published
in the *Federal Register* February 2, 2011. This letter does not attempt to respond to every
question raised by the Request, but focuses on questions to which the AMA believes it might
provide helpful information.

Section 1322(a) of the Patient Protection and Affordable Care Act (ACA) requires the Secretary
of Health and Human Services (HHS) to establish the Consumer Operated and Oriented Plan
(CO-OP) program. Operating as nonprofit organizations, CO-OPs will compete directly with
established nonprofit and profit-seeking insurers. As discussed below, there is an urgent need to
increase competition in insurance markets. Thus, we believe it is imperative that the Secretary
promote the development of CO-OPs, and interpret the law in a flexible manner that maximizes
the likelihood of successful new entrants into the health insurance marketplace.

A. Private Health Insurance Markets are not Competitive

An important premise of the American health care system is that competition among insurers
promotes innovation while limiting premiums and premium growth. These are the benefits of
competition in textbook markets, and private insurance markets could, in theory, generate these

benefits for their policy holders. But competition requires competitors, and a careful examination of the data suggests that most Americans buying health insurance do not have many competitive options. Put another way, most Americans do not enjoy the benefits of health insurance competition because most health insurance markets are not competitive.

There are dozens of firms selling health insurance, so the claim that insurance markets are not competitive may seem surprising. To understand why markets are not competitive, it is useful to think about the geographic scope of competition among insurers. When purchasing health insurance, consumers will naturally focus on carriers whose networks include local providers; no one who lives in, say, Chicago, will sign up for a plan whose network consists of hospitals and doctors in Detroit. By the same token, Chicago-area providers will seek to contract with insurers whose enrollees reside in Chicago. The upshot is that health insurance markets—both the market for enrollees and the market to contract with providers—are local. And, as discussed below, competition in local markets is usually very limited.

Given the nature of health insurance purchasing and network formation, it is reasonable to define local markets as Metropolitan Statistical Areas (MSAs). For the past several years, the AMA has published an annual report—*Competition in Health Insurance: A Comprehensive Study of U.S. Markets*—that describes the degree of health insurance competition in MSAs. In its reports, the AMA refines data provided by the private, independent consulting firm HealthLeaders-Interstudy, which, in turn, obtains its data from state insurance regulators, as well as its own proprietary surveys. The general findings about competition that emerge from the AMA report are consistent with findings derived from other data sources.[1]

The AMA reports two important measures that shed light on the extent of competition in health insurance markets. The first is a measure of market concentration called the Herfindahl Hirschman index (HHI). The Department of Justice and Federal Trade Commission classify markets with an HHI of 2500 or higher as "highly concentrated."[2] According to the most recent AMA report, 80 percent of the 359 MSAs studied are highly concentrated. The second metric is the market share of the largest insurer. When an insurer's market share is at least 50 percent, it may be thought of as having monopoly power. The AMA report finds that in 48 percent of the MSAs studied, the largest insurer had a market share of 50 percent or higher, while in 18 percent of the MSAs, the largest insurer had a share of least 70 percent.[3] These figures are broadly consistent with earlier years and are also consistent with market shares computed from other data sources.

The antitrust agencies are rightfully concerned that such high levels of concentration could harm consumers. Economic research finds that, all else being equal, insurance premiums are higher in

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[1] Dafny, L., Dranove, D., Limbrock, F., and F. Scott Morton, 2011,"Data Impediments to Empirical Work in Health Insurance Markets." BE Press, Forthcoming

[2] U.S. Department of Justice and Federal Trade Commission, Horizontal Merger Guidelines. Issued August 19, 2010.

[3] Competition in Health Insurance: A Comprehensive Study of U.S. Markets, 2010 Update. The data are from January 1, 2008.

concentrated markets.[4] The effects of concentration may seem modest—several percentage point increases in premiums according to published economic studies—but this can translate into as much as $100 billion annually.[5]

When established firms earn high profits, one might expect new firms to enter. But entry barriers in health insurance are high. The networks of established carriers represent an important barrier. Not only is it costly for new insurers to establish provider networks, established carriers can use their market clout to demand favorable rates, putting entrants at an immediate competitive disadvantage.[6] Start-ups encounter another barrier when trying to sell to small employers through insurance brokers, because many brokers have a preference for established insurance brands. Many entry barriers involve significant upfront costs, including investments in billing systems, medical information systems, marketing, and establishment of disease management guidelines, quality controls, and incentive systems.

Entry barriers have enabled large incumbent insurers to remain profitable and maintain their dominance for years if not decades. The grant and loan provisions of Section 1322(a) of the ACA will facilitate entry by CO-OPs and, if applied flexibly, will likely increase market competitiveness.

B. Role for Providers in CO-OPs

CO-OPs will be entering a highly complex market that will require a broad array of technical skills. A successful CO-OP will need the following skills in addition to the basic insurance functions of collecting premiums and paying claims: disease management, wellness and prevention management, utilization and care management, and quality of care management. In considering these requirements, the challenges are enormous for anyone who has never been involved in health care. To put it simply, most individuals, even the most talented entrepreneurs, do not have the skills to run a CO-OP and compete against private insurers. But these skills are not exclusive to representatives of incumbent insurers. Physicians deal with these issues on a daily basis. They are ideally positioned to take a lead role in establishing and managing CO-OPs and, unlike representatives of incumbent insurers, physicians are *not* among those listed in Section 1322 (e) as being prohibited from serving on the board of directors (and therefore, under principles of statutory construction, physicians are permitted to assume roles on the governing board). Moreover, physician board membership and leadership would give the physicians a stake in the competitive success of the CO-OP. They may therefore be expected to: (i) foster CO-OP marketing through testimonials offered to patients; (ii) develop an efficient provider

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[4] See: Dranove, D., Gron, A., and M. Mazzeo, 2003, "Differentiation and Competition in HMO Markets" *Journal of Industrial Economics;* Dafny, L, 2010, "Are Health Insurance Markets Competitive? *American Economic Review*; and Dafny, L., Duggan, M., and S. Ramanarayanan, 2011, "Paying a Premium on Your Premium: Consolidation in the U.S. Health Insurance Industry" Unpublished Working Paper.

[5] Annual private sector health spending is well over $1 trillion.

[6] Christine A. Varney, Assistant Attorney General, Antitrust Division, U.S. Department of Justice "Remarks as Prepared for the American Bar Association/American Health Lawyers Association, Antitrust in Healthcare Conference." Arlington, VA, May 24, 2010. http://www.justice.gov/atr/public/speeches/258898.htm.

network that would lower costs; and (iii) discount physician fees to levels that would enable the CO-OP to successfully enter a market dominated by large established insurers extracting large discounts because of their market shares. Physicians should be encouraged to seek out grants and loans under Section 1322(a).

If CO-OPs are to succeed, it will also be important for physicians to have some "skin in the game." CO-OPs will have to change incentives by rewarding providers who deliver higher quality at lower cost. There are many different models for organizing CO-OPs, with different degrees of vertical and horizontal integration. Each model changes incentives by using ownership rights, direct financial incentives, and/or organizational controls in various proportions. At one end of the "integration spectrum" stand vertically-integrated arrangements such as Kaiser Permanente in which large multi-specialty physician groups are aligned with a single hospital system and a single health plan. The physician group in the "Kaiser Permanente" model is fully accountable for health spending and uses internal controls to encourage member physicians to practice efficiently. At the other end of the spectrum, multispecialty groups such as the Mesa County Medical Society IPA contract with one or more local hospitals, with other physicians who are not part of the group, and with other affiliated medical providers. The physician group in the "Mesa" model relies on internal controls for group members, but the insurer collaborates with the physicians and uses selective contracting to identify and promote efficiency in its partner providers. CO-OPs should be encouraged to explore these and whatever other models may make sense in their communities; grants and loans to startup CO-OPs should not be made contingent on specific organization forms.

II. Responses to Questions Raised in the Request

A. Response to Questions under Heading A

Question (1)(a)

Any regulatory requirements or guidance implementing the ACA CO-OP program should maximize opportunity for different types of organizations to qualify for grants or awards under the program. The types of organizations that are more likely than others to enjoy long-term success will be those that can preserve and improve upon quality of care while reducing health care costs. This depends upon accessing or developing the following:

- health care provider networks that utilize demonstrated best practices that optimize timely and appropriate disease intervention and care settings;
- onsite patient wellness and prevention education programs that train members to become and then stay healthy; and
- community-based governance focused on maximizing both financial and quality of care management.

There are numerous organizations that might serve as natural spring boards to the formation and operation of nonprofit insurance issuers that would satisfy the requirements of the ACA's CO-OP program. These include independent practice associations (IPAs), state medical societies, and physician-sponsored accountable care organizations (ACOs). They may already have in place or be strongly affiliated with a robust provider network that, in combination with a health care financing system and administrative capability, could form a CO-OP with a strong consumer focus. Local health care foundations or other community health groups, small group multiple-employer trusts, and established physician-hospital organizations could also form the basis of an ACA CO-OP.

Question (1)(b)

It is our understanding that there may be some organizations that currently either satisfy the statutory eligibility criteria or are in the process of attempting to do so.

Question (1)(c)

It is likely that there will be a significant difference between the funding needs of existing insurers (that were established after July 16, 2009 and therefore are not prohibited from qualifying under the federal program) and start-up issuers. New issuers will require substantially more funding than existing nonprofit issuers. In general, successful existing qualified nonprofit issuers should, to a large degree, require less funding because they already have an insurance license and know what works in their communities and what does not. Hence they do not need to expend the often substantial resources necessary to obtain an insurance license and in many states, will likely not need to incur substantial costs associated with a complete environmental scan and associated business plan, and are not likely to expend funds on wasteful trial and error approaches. Also, it may be reasonable to assume that existing nonprofit health issuers have already met the statutory reserve requirements and have achieved their necessary capital footing. Consequently, the funding needs of existing nonprofit issuers will primarily be oriented to re-tooling legacy systems to meet new objectives versus starting them from scratch, e.g., implementing an online patient registry system.

While those nonprofit issuers that have not yet been established have the advantage of implementing all of the necessary components for successful operation from their inception, they nonetheless have start-up costs to which existing nonprofit issuers are not subject. Such start up costs would include, among other potentially significant expenditures: management hiring; actuarial evaluations; advertising to gain name recognition; operational establishment; and licensing hurdles.

Question (1)(d)

A new, start-up nonprofit health insurance issuer should be permitted to outsource many of its operations, which would dramatically reduce the nonprofit's funding requirements. In addition, the ACA authorizes the establishment of private purchasing councils "to enter into collective

purchasing arrangements to increase administrative and other cost efficiencies," which may level the playing field in terms of start-up and ongoing funding needs and increasing chances for success.

Question (1)(e)

Initially these differences would be based on the differing loan or grant proposals, which would specify the proposed business plan. Differences might be addressed via an iterative process, in which initial terms of financing are set, and then contractually adjusted as new efficiencies and funding sources are developed. The loan and grant terms would be structured to reward entities that developed more robust funding and co-administration resources.

Question (2)(a)

Aside from obvious business operating skills, a loan or grant applicant should demonstrate the ability to provide directly, or through a contract with a third party, the following:

Actuarial Evaluations	Utilization & Care Management
Claims Processing	Disease Management
Provider Network Administration	Predictive Analytics
Plan Design & Demand Management	Wellness & Prevention Management
Re-insurance Arrangements	Smart Media Communications
Member Consumables	Web-based Services
Provider & Member Relations	Quality of Care Management
Commitment to Transparency	Sales and Marketing

New entrants would also need the ability to obtain insurance licenses and meet ongoing insurance regulatory requirements. In some states a health insurance issuer may be permitted to lease its insurance license to a qualified nonprofit issuer. If so, a qualified nonprofit issuer's ability to lease such a license might facilitate the CO-OP's ability to enter a market and service its community. The AMA requests that the Secretary provide guidance concerning whether or not such leasing arrangements would violate the statutory eligibility criteria for qualified nonprofit issuers.

Question (2)(b)

A successful management team will either need to have, or contract with third parties that possess, industry experience in every area of a CO-OP, e.g., business operations and management, collaborative governance, and insurance sales and customer service. This is to ensure that CO-OPs become operational quickly and more efficiently. Industry veterans and

physicians make a good combination of complementary skills to manage the operational and clinical areas for the added benefit of members. They will know from the beginning those types of programs that will enhance the quality of member care while operating competitively and within budget. Accordingly, the management team should include physician representatives of physicians (MDs and DOs) who are actively practicing medicine through the CO-OP to ensure the quality and delivery of care. Such physician representatives could, for example, be representatives of a physician-sponsored medical group, IPA, or accountable care organization that contracts with the CO-OP.

Question (2)(c)

The following are some of the factors that are likely to lead to the success and sustainability of a CO-OP: (1) appropriate scope of services; (2) real-time information technologies; (3) appropriate focus on health outcomes; (4) shared governance and collaboration among all stakeholders; (5) ease of access; (6) low member costs; (7) appropriate levels of risk assumption and reinsurance; and (8) physician "buy-in" to the mission.

Question (3)

The CO-OP should have a good working relationship with the community's providers to ensure that the CO-OP has a network of quality providers that are sufficient to address the community's needs, both in terms of services provided and geographic coverage. Those responsible for creating and operating the CO-OP should have an established relationship with the community in which the CO-OP will provide its services. The ACA program should help ensure that CO-OPs have sufficient initial funding to provide products with a benefit design that is competitive with other health insurance products being offered to consumers in the community. This would include, but not be limited to, competitive patient cost-sharing obligations. The CO-OP should (i) have a demonstrated commitment to achieving measurable quality health outcomes and clinical quality initiatives, and (ii) be transparent with respect to outcomes and other operations and products that directly affect its members, e.g., benefit design, member cost-sharing obligations, network provider availability, etc. The relationship with enrollees would also be enhanced if the CO-OP had a brand name that was associated with high quality care, responsive customer services, and continued organizational process improvement (claims, member services, authorization/referrals, provider access, etc.)

Question (4)

There are several key challenges that may face qualified nonprofit issuers in developing provider networks in rural or other medical shortage areas. One of the most challenging issues will be the ability of the issuer to develop or have access to an adequate provider network. In order to develop such a network, the CO-OP must be able to pay providers fair and adequate reimbursements to ensure that providers may participate in the CO-OP's network without threatening the financial stability of their practices or operations. CO-OPs must be sufficiently funded in order to alleviate any concerns regarding the financial stability of the CO-OP,

including, but not limited to, the CO-OP's ability to continuously meet statutory reserve requirements and to pay claims on a timely basis. Any perceived threat of instability, either short or long term, will discourage provider participation and undermine the CO-OP's ability to secure an adequate network for its members.

To succeed in these challenging environments, it is essential that CO-OPs be able to provide a business opportunity sufficiently appealing to attract most, if not all, of the providers in the community. In some cases, such providers can be leaders in establishing the types of CO-OPs that would be more beneficial to members. Provider quality of life, resistance to adoption of new technologies and new care models (e.g., health care teams, patient-centered medical home models), lack of medically necessary services, and perceived non-sustainability of the CO-OP may constitute other challenges to provider network development in these areas.

Question (5)(a)

Generally, the lead time for establishing a CO-OP is at least one to two years, as it will take at least this much time to develop necessary infrastructure, attract qualified management and personnel workforce, fund all necessary capital reserve requirements, acquire the appropriate licenses and certifications, develop actuarial pricing models and benefit plan or insurance policy designs, establish or access a robust provider network, create an IT initiative, organize a distribution network and implement clinical quality initiatives, establish all necessary vendor relationships, and deal with the timing of enrollment periods in the CO-OP's market area. After this initial phase has been completed, the CO-OP will need additional time to become fully operational such that it can accept enrollment and provide health insurance coverage. Lead time can be reduced if the CO-OP is able to outsource at least some of its key operational activities, and lead time will increase if the CO-OP keeps all of its activities in-house.

Question (5)(b)

The time it takes to obtain an insurance license may significantly extend the timeline within which the CO-OP may become operational. States may vary significantly with respect to how quickly a license application may be approved by the requisite state regulatory agencies. It may also take a significant time for the state to approve proposed premium rates, unless the state is a file and use state. Market fluctuations concerning the valuation of capital reserves may also increase the amount of time that the CO-OP will have to obtain the capital reserves required by state law. Putting together a provider network may also increase the deadline, depending on whether or not existing provider networks are in place to which the CO-OP may gain access via rental or other contractual arrangements.

Question (6)(a)

Specific details should include the following:

- Market demographics
- IT model

- Actuarial evaluations
- Competition surveys
- Capital reserve requirements
- Market licensing requirements
- Target market penetration
- Scope of services to be offered
- Network penetration analysis
- Provider integration model
- Reasons why individuals or small groups are not currently insured
- Enrollment potential

- Staffing model
- Available medical services
- Balance sheet, projected income stmt.
- Use of funds
- Market share growth projections
- Marketing targets and methodologies
- Governance structures
- Key assumptions
- Key network providers and provider reimbursement methodologies

Conducting feasibility studies, business plans, and marketing plans may involve significant expense. It is likely that many communities that could otherwise benefit from a CO-OP entering the local or regional insurance market may not if funds are not available that will finance these initial business planning activities. Thus we recommend the Secretary consider making initial planning grants in appropriate cases.

Question (6)(b)

The scope and content of these studies should include: (1) the data sources supporting and driving the assumptions utilized in the feasibility studies, business plans, and marketing plans; (2) system variables that could impact those assumptions; (3) the level of expertise with delivering projected services; (4) projected costs; and (5) the potential for reproducibility of required services [e.g., actuarial services] to avoid duplication of costs.

Question (6)(c)

There should be sufficient detail to measure or evaluate the scope, adequacy, methodology, accountability, and likelihood of success. Actuarial studies and modeling by geographic area may be useful in providing needed details.

Question (7)

Provider and population demographics, target market penetration, and scope of services will dictate level of investment. The level of investment will depend on whether the CO-OP will outsource some of its administrative functions, e.g., claims processing, eligibility, medical management, and customer service, or whether the CO-OP will develop those in-house. A large portion of investment for administration will be directed to developing the claims processing system, assuming it is not outsourced.

The costs of implementing and operating administrative processes do vary by geographic areas and enrollment size. The table below demonstrates how administrative costs vary by geographic area. This is provided as a guide for how the level of investment may need to vary by area.

Area	Factor	Area	Factor	Area	Factor
1	1.127	4	0.843	7	1.114
2	1.070	5	1.126	8	1.060
3	1.025	6	0.887	9	0.844

The areas used are the following census regions: Area 1 (Connecticut, Delaware, Maine, Massachusetts, New Hampshire, Rhode Island and Vermont); Area 2 (New York, Pennsylvania, New Jersey); Area 3 (Indiana; Illinois; Michigan; Ohio; Wisconsin); Area 4 (Iowa; Nebraska; Kansas; North Dakota; Minnesota; South Dakota; Missouri); Area 5 (Delaware; District of Columbia; Florida; Georgia; Maryland; North Carolina; South Carolina; Virginia; West Virginia); Area 6 (Alabama; Kentucky; Mississippi; Tennessee); Area 7: (Arkansas; Louisiana; Oklahoma; Texas); Area 8 (Arizona; Colorado; Idaho; New Mexico; Montana; Utah; Nevada; Wyoming); Area 9 (Alaska; California; Hawaii; Oregon; Washington).

The impact of enrollment size will depend in large part on the extent to which the CO-OP purchases systems to operate in-house or chooses to outsource them. Outsourced costs will typically be directly based on enrollment numbers, whereas system costs will generally be the same regardless of the enrollment. For this reason, we strongly urge the Secretary to authorize start-up CO-OPs to outsource services, at least until they have reached a critical mass (50,000-100,000 covered lives). See the attached paper authored by Ruth Givens, "Economies of Scale and Scope as an Explanation of Merger and Output Diversification Activities in the Health Maintenance Organization Industry."

Once a CO-OP is fully operational and has reached critical mass, operational expenses typically are proportional to enrollment. Based on a database of over 300 health plans that captures their actual administrative costs per year since 1995, the projected administrative expense per member per month (PMPM) for 2013 is $49.29. (This data includes administrative cost data for plans that operate predominantly in the commercial market as opposed to Medicare or Medicaid.) Thus, a CO-OP serving 100,000 members of a community located in Area 1 could expect to inure annual administrative costs of $66,659,796 (100,000 x $49.29 x 1.127 x 12 months). If funding for investment will extend, say, to the first year of operations, funding may need to be available to defray some of these administrative costs.

There are investments that will be required regardless of enrollment size. For example, investment in health information technology (HIT) is provider-demographics-driven, not enrollment-driven. Enrollment size will impact the volume cost of consumables but not necessarily the HIT system itself. To the extent the CO-OP makes major initial investments in claims processing or other in-house functionality rather than outsourcing these services, those initial investments will be essentially the same regardless of the size of enrollment or the provider network. As noted above, geographic location will impact technology system costs.

Existing issuers may already have at least some of these necessary systems in place, so their funding needs may be more oriented around expansion and upgrading of services versus purchasing of services.

Question (8)

Although in some cases a qualified nonprofit issuer may wish to implement a health information technology system, the Secretary should not require qualified nonprofit issuers to do so, as such a requirement could be prohibitively expensive. Such a requirement may also not be appropriate, as it is important to keep in mind that a qualified nonprofit issuer is not an integrated health care delivery system (which may be required to adopt systems such as electronic health records) but a payer. Moreover, there are numerous intermediate approaches that CO-OPs should be able to consider, e.g., patient registries or other case management systems. As payers, qualified nonprofit issuers should, however, be required to use all electronic transactions standards adopted under the Health Insurance Portability and Accountability Act of 1996.

Question (9)

The level of funding needed to capitalize and fund the new qualified nonprofit issuer will depend on the projected levels of enrollment. Generally, higher levels of enrollment will need more capital but larger plans are more stable and the level of capital PMPM is lower. The following table shows the parameters for determining the amount of capital needed (from a comprehensive database of health plan results 1995-2007). The statistical values in the table are representative of years when a number of health plans were in their initial years of operation.

Plan Size	% of Years with Gain	% of Years with Loss	Historical G/L PMPM	Median Annual G/L PMPM	Needed Capital
Under 25K members	24%	76%	(15.79)	(6.17)	$18.6 mil
25-50K	50%	50%	(1.58)	(0.53)	$10.7 mil
50-100K	50%	50%	(1.54)	(0.40)	$18.1 mil
100-200K	50%	50%	2.63	0.73	$18.8 mil
200-500K	60%	40%	4.37	1.00	$44.2 mil
Over 500K	60%	40%	7.25	1.51	$57.6 mil

Based on this table, it appears that a CO-OP will need at least 25,000 members to increase the chance of survival beyond 5 years. Funding needed to capitalize such a CO-OP would be in the area of $10.7 million. Reaching the membership threshold of 100,000 members seems to be the point where long-term financial stability is attainable, and corresponding capitalization appears to be in the area of $18 to $19 million. (These numbers appear consistent with the attached report prepared jointly by the American Academy of Actuaries and the Society of Actuaries entitled, "Federal Health Care Reform 2009: Start-Up Capital Costs for Health Care Co-OPs and a Public Plan".) The amount of capitalization could also be affected by factors such as the extent

to which the CO-OP may outsource administrative tasks, state capital reserve requirements, target market demographics, and how quickly the CO-OP expands to maximum size.

The factors that should be considered in determining the appropriate amount of federal loans and/or grants that would be needed to support the establishment of a new nonprofit health insurance issuer include, but are not limited to: importance of the CO-OP to access to care for consumers in the community and the competitive environment for health insurance and state reserve requirements; how large the CO-OP wants to become; quality and credibility of the business plan; experience of the applicant; financial strength of the applicant and /or its financial supporters; the scope and estimated cost for services and operations based on applicable market dynamics; build or buy decisions; provider resources, and the likelihood of the CO-OP's success.

Variation in the capital needs of different CO-OPs could vary widely across state lines, depending on factors mentioned in the previous paragraph.

Question (10)

In terms of specific functions needed to maintain appropriate fiduciary management and oversight, which the AMA assumes includes the in-house Chief Financial Officer and financial department, as well as certified actuarial and accounting costs, the amount of investment should not take more than $250,000 to $500,000, which may vary depending on the size of the financial team that is retained to perform these functions.

Question (11)

High reserve requirements could serve as a barrier to CO-OP formation. Lengthy administrative processes necessary to obtain a license may also be a significant barrier. CO-OP creation may be more difficult in states that prohibit multiple employer welfare arrangements, and in states where insurance rates must be approved before being implemented.

Some states may be interested in amending insurance laws to accommodate CO-OPs. In some states there may be a concern regarding the lack of competition in the state's health insurance markets. In such circumstances, a state may have sound reasons for amending its licensure laws to facilitate CO-OPs' entry into the state's health insurance market, e.g., by reducing the amount of time within which regulators must approve a license application or a certificate of authority.

In some circumstances, it would be desirable for CO-OPs to serve members in multiple states. To the extent possible, states should encourage the ability of CO-OPs to serve employees of companies who reside in different states, who are considered part of the CO-OP's organic community. Some examples include Kansas City (Missouri and Kansas); St. Louis (Missouri and Illinois); Chicago (Illinois and Indiana); and the geographic area that includes sections of New Jersey, Pennsylvania, and Connecticut. If CO-OPs are not allowed to service community members existing in contiguous states, CO-OPs would be placed at a decided competitive

disadvantage vis-à-vis commercial health insurers. Of course CO-OPs would still be obligated to satisfy the insurance requirements of all the involved states.

Larger CO-OPs may have the surplus to benefit members by increasing quality initiatives and investing in those HIT systems that yield efficiencies in managing the CO-OP. In that light, CO-OPs could be able to achieve this by developing regionally or at least in the larger Metropolitan Statistical areas. Such CO-OPs may also be able to extend into rural communities with their added efficiency and bring down the costs of rural CO-OPs.

Question (12)

In some circumstances, it may be imperative that large employers or associations of employers be included within the CO-OP's activities, particularly when the CO-OP begins its initial operations. A new issuer may have great difficulty competing in the individual and small group markets. There is currently strong competition with existing distribution networks, aggressive pricing, and the challenge of adverse selection for a new plan to break into the market (especially with limited marketing funds). To increase the likelihood of success, CO-OPs will need a sufficient number of members among which to spread the risk of health care costs. In some markets, there may not be enough individuals in the individual and small group market to provide a sufficient number of prospective members to achieve the necessary risk spreading. So in some cases, prohibiting large employers or employer associations from CO-OP participation will automatically preclude CO-OP development.

To successfully compete in different markets and satisfy the statutory criteria for being a qualified nonprofit issuer, a qualified nonprofit issuer will have to take into account the following factors:

- Actuarial Evaluations for Pricing
- Plan Designs
- Provider Network
- Member Consumables
- Provider & Member Relations
- Re-insurance Arrangements
- Claims Administration

- Utilization & Care Management
- Disease Management
- Predictive Analytics
- Wellness & Prevention Management
- Smart Media Communications
- Web-based Services
- Sales and Marketing

Additional product lines must be reviewed either as accretive or stand-alone positive cash flow. A number of factors would be involved in addressing any addition of product lines, including operational experience, capacity for additional members, different skill sets in managing the members of this new product line, whether different provider networks are required, capacity of existing network, and reporting requirements.

Having access to potential members covered under Medicaid or CHIP could help provide the CO-OP with a sufficient number of potential members to sufficiently spread risk so that those interested in creating, operating, and joining the CO-OP will have the requisite confidence that

will be essential if the CO-OP is to become a reality. At the same time, the potential inclusion of Medicaid and CHIP beneficiaries as CO-OP members may help alleviate growing concerns about access to health care for these patient populations. Whether or not a CO-OP can actually accept Medicaid or CHIP beneficiaries as members will depend on factors such as pricing, product, panel, and broker support. If the first three of these criteria are competitive and the fourth one present, it is unlikely that a CO-OP would find it difficult to accept Medicaid or CHIP beneficiaries as members. Finally, a qualified nonprofit issuer may want to participate in the Medicaid and CHIP programs because there is the potential for individuals to shift from being qualified for Medicaid to individual health insurance or vice versa. To be able to serve both markets will allow the member to remain insured and not have to change plans. CO-OPs should also have the freedom to serve the dental, vision, and perhaps workers compensation markets.

If CO-OPs are to become a real alternative to incumbent health insurers and provide greatly needed competition in health insurance markets, we believe that the Secretary should exercise flexibility when interpreting the statutory requirement that "substantially all" of a qualified nonprofit issuer's activities must be in the individual and small group markets. Rather than limiting its interpretation of this phrase only in terms of the total number of enrollees in the small group and individual markets, the Secretary should interpret "substantially all" in terms of the numbers of policyholder contracts in those markets. In many communities that could benefit greatly from a CO-OP arrangement, there are frequently one or two (or a small set of) key community constituents that any insurer or health plan must sign up if it is going to enter the market. Such constituents could include the local municipality, or a relatively large private employer such as a hospital or factory, or retailer. If "substantially all" is narrowly interpreted to mean that substantially all of the qualified nonprofit issuer's enrollees are in the individual or small group markets, then it is likely that a CO-OP will never be available to such communities since, at least initially, a significant percentage of its enrollees may be part of the large group market. However, if "substantially all" were interpreted to mean that substantially all of the qualified nonprofit issuer's policyholder contracts involved the individual or small group markets, then CO-OPs would likely be able to enter and serve such communities, since contracts with the community's key constituents would likely be a small percentage of the total policyholder contracts that the CO-OP holds in the community. Unless the Secretary allows for this latter, more flexible, interpretation, CO-OPs' entry into some communities may be delayed if not foreclosed, a result that is inconsistent with the intent underlying section 1322.

Question (14)

Pricing and risk selection are among the most important factors affecting the qualified issuer's durability. A CO-OP will need to price its products correctly—enough to generate a surplus, but also to be competitive in the marketplace. In addition, the CO-OP's enrollees must not be substantially sicker than average, or there must be a stop-loss/reinsurance/transfer payment mechanism to ensure that that higher risk does not force the CO-OP to raise premium costs above competitive levels in its market. The conduct of a CO-OP's competitors will also affect durability. The likelihood of durability will decrease if incumbent competitors are able to

engage in anticompetitive conduct such as predatory pricing in the early years of the CO-OP to drive it out of business.

Other factors that will affect long term durability include a competent management team that can control variable such as: efficient operations; management of administrative costs; eventual number of members and/or market share; other competitors' pricing, product designs, and provider network; the number of competitors; management of member health; the CO-OP's ability to provide quality of patient care and customer service; how well brokers support the product; scope of services; and provider reimbursement and retention.

Question (15)

At least a minimum enrollment of 25,000 members may be necessary for the CO-OP to have a chance of long-term viability. But the threshold for a real likelihood of achieving long-term viability would appear to be 50,000 to 100,000 members. Interestingly, this also appears to be the level where efficiencies may be maximized. See the Attached Paper authored by Ruth Givens.

With regard to risk-sharing, see Question B1 below.

Question (16)

The Secretary should provide technical assistance only to the extent that the federal government has the expertise to do so across the widely varying needs of the various CO-OPs. It may be more helpful for the federal government to host a discussion website where interested participants could share successes and failures and seek peer advice. Any technical assistance provided by the Secretary should be done in coordination with services provided by the purchasing council authorized under the ACA.

Question (18)

In order to build a strong provider network, the CO-OP must be able to pay providers fair and adequate compensation for their services, including care management and oversight. The CO-OP should also offer providers contracts whose provisions are provider-friendly and represent a win-win for both the CO-OP and participating providers. Supporting providers' efforts to acquire and maintain information technology has also been found to be a successful strategy to build a provider network. Another effective strategy is to partner with existing IPAs and other physician groups in the community.

As discussed previously, we believe CO-OPs should be authorized to lease existing rental provider networks, at least during the early years of their existence.

B. Response to Questions under Heading B

Question (1)

The AMA believes that the Secretary should interpret flexibly the statutory provisions giving priority to applicants that utilize integrated care models. There are a wide variety of strategies for "integrating care," and CO-OPs need the flexibility to implement strategies that are both affordable and have the potential for market acceptance in their communities.

For example, the perceived ability of, or the desire to, share risk is not in itself a marker of clinical or administrative competency. Although ultimately perhaps a desirable incentive mechanism, risk sharing should have little bearing on establishing priority for CO-OP grants and loans. Indeed, even before addressing the statutory priorities specified in section 1322(b)(2)(A)(ii), the threshold question should be the CO-OP's potential value to the community, including improved access to care and increased competition in the market for health insurance.

The phrase "integrated care model" is generic and has a fairly well-known meaning among health care providers. It implies something other than a simple transaction between a patient and one or multiple providers, most of whom record their diagnosis, care or prescription separately. In that simple transaction, no one provider has coordinated care in advance or even contemporaneously with another provider, and each is paid a simple fee for the service or the facility provided.

When these providers begin to coordinate their care among one another, an "integration" of care occurs. From there, integration is a matter of degree. Some such models use a medical director as a central point of communication and arbiter of protocols to consistently address the management of a case category, such as diabetes or cancer, which will involve primary care physicians, various specialists, and a medical facility.

A rudimentary model necessarily involves the development of clinical protocols on which everyone on the team has agreed. A more advanced model collects all the encounter data of such management in a central data storage location and one or more leaders routinely study the data with the goal of improving the efficacy and cost efficiency of such care. A still more advanced model may do these things while offering each of the providers a financial incentive beyond simple fee-for-service, e.g., for improving care, however defined, while reducing costs.

These incentives would include the opportunity to see revenue rise, depending on defined outcomes for individual patients and for a patient population as an aggregate whole. At the far end of the spectrum, each and every provider type needed across the full spectrum of care would be included, and the provider group would be accountable for cost and quality efficiency.

Legally, such a care model is usually, to some degree, a joint venture of a few or a large number of provider groups. The Federal Trade Commission and U.S. Department of Justice would

consider at least those models substantial risk-sharing legitimate joint ventures that can speak collectively to payors, such as employees, insurers or CO-OPs. At the less coordinated end, they might refer to one or more of these models as "clinically integrated," justifying their status to speak with one voice to payors and enter into agreements with them.

In each case, the ventures so organized, whether in a simple form for the management of a particular case or in a form ready to take on financial risk, are attempting to become clinically accountable for the actions of more than just a single provider. This is the fundamental idea behind the development and payment of Accountable Care Organizations, as defined in Section 3022 of the ACA.

While these categories provide some idea of the theoretical degree of integrated care for measurement purposes, it is important to understand that there are far more groups organized, or organizing, to perform this way in the future than those with past experience. It is our view that organizations with a plausible plan for executing such a model, and which do so, should be considered an "integrated care model."

In this regard, it is critical that all physician models with credible plans that seek to be initial founders of CO-OPs be not only permitted, but encouraged to do so. The development of such a network is a difficult undertaking. Providers who sponsor such an undertaking will have already taken great risk of time and capital to develop such a model. From a legal view, providers might be both contractors of services through a defined entity, as well as individual "members" of the nonprofit health insuring corporation, as that term is defined and will be defined in regulation (to the degree that they also commit to purchasing the CO-OP's insurance product, which would be the most significant proof of their commitment). A network of primary, secondary, and tertiary care providers who create an efficacious model of care delivery will need loan assistance to complete the creation of such a model, and should be given priority, as they are most likely to actually deliver the product the drafters of Section 1322 envisioned.

A key measure of successful care integration and one that will be crucial to the success of the CO-OP model is the strength of the dynamic between the CO-OP board and the community it serves. In addition, using feedback from the community and CO-OP leaders and the rank-and-file providers serving CO-OP members, the following measures could be used to appropriately measure a successful degree of care integration:

- Commitment by the CO-OP board to the CO-OP's mission and to the community;
- Commitment by the community to the success of the CO-OP;
- Level of trust between the community and the CO-OP;
- Communication of quality-based care guidelines to providers and support teams;
- Affordability and sustainability of health care costs;
- Actual patient outcomes measured against optimal patient outcomes; and
- Inclusion of solo practicing physicians, or small physician groups, which have a record of dedicated service to the CO-OP's market.

Question (2)

"Significant private support" should be given its broadest and most liberal meaning. The formation of a nonprofit insurance company to serve the individual and small group market under an exchange not yet even defined in many states is a highly speculative undertaking. It will require a variety of support from individuals and entities not likely to yield any return other than the possibility of seeking a new way to finance and deliver care. Clearly, financial support from existing civic or specialized foundations should qualify, and one or more of these organizations will need to front a minimum of $200,000 to be able to deliver a credible business plan and initial application for loans. Hospital-related foundations should be considered likely candidates to provide such support, particularly where the initial organizers are physicians, and so long as that support is from two or more such hospitals (to discourage proprietary undertakings of a single health system) they should be encouraged to do so. Regulators should also be cognizant of non-financial support wherever organizers of a CO-OP have worked to create an integrated care model, whether those organizers are working with providers or essentially are providers; substantial time and energy will have been invested in the project that, like risk capital, should be an indication of "skin in the game" that is likely to lead to success.

Question (3)

In general terms, a clear understanding of the CO-OP's mission, clear bylaws, conflict of interest declarations, transparency, and sound legal advice will help avoid inurement.

Nonprofit insurers will necessarily have to work with a range of consultants and business people who also may be in a position to provide back-office support and infrastructure to the new entity once it begins to do business. Contracts for such support may be for a period of years. These contractors who provide actuarial assistance and back-office infrastructure, such as claims management and administration, will be for-profit companies who seek to do business in the future with the CO-OP, should it get funding, become established, and successfully execute its business plan. Their discounted or contingent services (services provided for a steep discount on a contingent promise, for example, that the contractor will become the infrastructure provider during the first five years of the insurer's existence) should count as "private support." Nothing about such support should violate traditional notions of the ban on private inurement under 501(c)(3), and could be comfortably accommodated within the code's traditional analysis of "private benefit" for those who are employed by or contract with a tax-exempt organization. Such a contractor will and should at all times be subject to the absolute power of the board, so member control of such contractors would not be inhibited; and at the same time such an organization would be forced to charge fair market fees at the CO-OP's inception of business or face the likelihood that the product will fail in the marketplace as unable to compete on the basis of competitive premium. In each application, the details of these relationships should be fully disclosed and reviewed by the OCCII, bearing in mind the trade-off between the gamble such for-profit entities may be taking on the nascent entity, and the limitations on reward it might seek given the difficult and competitive nature of the marketplace.

Question (4)

The Advisory Board established under Section 1322 has heard testimony from a wide variety of professionals associated with the establishment of insurance products, from actuaries to insurance commissioners to developers of such products within traditional cooperatives and state non-profit insurers. In assessing the challenges to a timely formation of such a product for use in the Exchange, they have been virtually unanimous on one point: the development of a useable provider network is one of the most, if not the most, formidable challenges.

In summary, this is the natural result of provider segmentation and history of independence, skepticism, and most importantly, pressures on reimbursement. In highly concentrated markets, insurers with whom the CO-OP might compete can, because of their large market share, extract such large discounts that providers are not motivated to provide similar discounts to small upstarts, even though it might help reduce the large insurer's market share in the long run.

This testimony on the difficulty of establishing provider networks was given even before considering the realistic but challenging goal of forming a provider network that has the tools and motivation to provide clinically integrated care. As a result, we are confident that the types of organizations most likely to succeed are those in which providers themselves have a hand in organizing the initial CO-OP infrastructure and clinical protocols. This will increase the chance that that the CO-OP will succeed in the goal which section 1322 sets for those it finances with public money: lowering costs and producing good, even exemplary, medical and health results within its membership. Viable options for the physician component include existing IPAs, more integrated group practices, and physicians linked in virtual networks for the expressed purpose of supporting and serving the CO-OP.

C. Response to Questions under Heading C

Question (1)

Properly conceived, most CO-OPs will focus on an insurance catchment area that may not neatly break down along state boundaries; some will cross state lines and need to be licensed in one state and certificated in another; and others will serve a significant and logical portion of a full state, but not the entire state. Without knowing about the subtleties of insurance coverage and marketing, the average person might anticipate that the needs and scope of a CO-OP in Rhode Island will be different from one in California.

At the beginning stages of the CO-OP creation process, prioritizing and favoring statewide qualified health plans may be problematic, and may threaten the success of the CO-OP program. Eventually, through federation, expansion of the purchasing councils, or other contractual processes, CO-OPs could pool membership and systems for the purposes of risk mitigation and administrative economies of scale, and then ultimately grow to a statewide scale.

However, to the degree that the Secretary can promote statewide formation, it is once again by permitting the active participation of providers that a statewide CO-OP is likely to result. The reason for this is that while insurance coverage and natural geographic barriers may make regional or multi-state insurers a more likely product, the key ingredient to CO-OP formation, provider networks, has a more likely tendency to identify with and cover the reach of state boundaries, making a geographically coterminous product more likely. For example, state medical societies, along with state hospital associations, may wish to promote development of CO-OPs. Their reach, naturally, would be state boundaries by definition. Even without the active involvement of state societies or associations, private provider IPAs and PHOs exist that have formed roughly along state boundaries and do business in various parts of the state.

As noted above, minimum funding requirements must take account of the population that the issuer is expected to serve, and the qualified nonprofit issuer's state mandated reserve requirements.

Question (2)

Consistent with the answer to (1), a direct appeal by the Secretary to a state medical association, health care foundation or other interested health care association to form a business plan for a nonprofit insurer to be run by a board largely composed of its members is the most direct route to a statewide product, because it would command the attention of the group that at once provides state reach and a potential statewide provider network: the physicians and facilities that will serve the CO-OP.

In each case, such a statewide network should be prepared to offer as part of the business plan a care model to tackle, at a minimum, the highest cost cases (cancer, heart, and obesity/diabetes-related conditions) and propose as part of its plan a method for cost-effective and continuous primary care attention. In addition, as a matter of definition, only those providers willing to purchase the product and become "members" would be able to have, along with other "members," any opportunity for initial or continued governance participation.

D. Response to Questions under Heading D

In order for the CO-OP to compete in a market, the CO-OP must have the ability to generate consumer awareness, especially during the start-up phase. A new CO-OP will be competing against long-time established health plans with familiar names (e.g., Blue Cross, Aetna, CIGNA, and United Healthcare). Without such awareness, many consumers would be denied the opportunity to choose the CO-OP, and the CO-OP's growth would be slowed, thus defeating the purpose of the federal funding to create a strong surplus-positive health plan. We believe that the Secretary should distinguish between the "marketing" for which the statute prohibits funding and the community outreach activities essential to CO-OPs' success. We urge the Secretary to monitor any anti-competitive activities against a start-up CO-OP and take appropriate action. Community outreach necessary to inform consumers of the CO-OP option should be considered

vital to the health of a CO-OP and the use of start-up funds to enable the CO-OP to compete should be considered.

E. Response to Questions under Heading E

Question (1)

The marketplace will be demanding competitiveness from CO-OPs as soon as health insurance exchanges are fully functional. Early success is mandatory because news of initial marketplace failure by a few CO-OPs will ripple through the country and brand the model as not feasible, scaring away potential business partners and contract network providers, potentially leading to more failures in a chain reaction industry meltdown.

It is critical that new qualified nonprofit issuers be operational by 2014. In fact, they need to be operational by October 2013. Loans and grants (to fund start-up activities) need to be available at least 18 months prior to the planned operational date.

Question (2)

The funds need to be front-loaded and available as early as January 2012. Thereafter, funds should be released to CO-OPs on having successfully reached and passed designated benchmarks.

F. Response to Questions under Heading F

Question (1)

The Secretary needs to take into consideration the state reserve requirements and factor that into the repayment schedules. The state will not allow the issuer to continue operating if they fall below state reserve requirements. Repayment schedules should not jeopardize a CO-OP issuer's ability to meet state reserve requirements if the CO-OP is delivering on its objectives. Accordingly, the Secretary should consider adopting measures that permit early predictability of repayment capacities to allow flexibility in administering repayment schedules to avoid a Hobson's choice of either repaying loans/grants or continuing to meet state reserve requirements.

Question (2)(a)

Some of the factors that will determine the ability of a qualified nonprofit issuer to generate sufficient revenues to repay the loans and grants include: strong and decisive management; appropriate financial controls with accurate tracking and reporting mechanisms; non-elaborate operational costs; conservative investment policies; appropriate stop-loss re-insurance arrangements; and adequate product pricing and population modeling.

Question (2)(b)

It will likely take five to seven years (assuming the date of the loan receipt as a start date), for the CO-OP to develop sufficient revenues to commence repayment. This is because it will take five to seven years to: (1) complete at least one complete terminal liability reserve cycle at close to full membership; and (2) make any necessary experience pricing adjustments in order to begin developing surplus revenues to earmark for repayment of grants.

Question (3)

In terms of pre-enrollment launch, benchmarks could include some or all of the following: (1) establishment of governance structures; (2) burn rates; (3) market analysis results; (4) personnel hiring; (5) provider panel contracting; (6) state licensing status; (7) vendor contracting; (8) product development and price modeling; and (9) success at achieving other Gantt-charted milestones.

In terms of post-enrollment launch, benchmarks could include some or all of the following: (1) membership growth; (2) market pricing competitiveness; (3) degree of success in patient satisfaction surveys; (4) panel sustainability; (5) medical-spending ratios; and (6) measuring actual to expected results where expected comes from the pro forma prepared in the business plan, which will include enrollment projections, revenue PMPM, and claims PMPM.

Question (4)

In the discussion of question 9 under Heading A, we identified enrollment levels that indicate higher probabilities of success. One threshold is reaching 100,000 members, although results do begin to stabilize after reaching 25,000 members. Getting administrative costs at or below 12 percent of premium (includes premium tax and all other assessed fees) also seems to be a good indicator of longer term financial success.

G. Response to Questions under Heading G

"Related entity" or "predecessor" of a health insurance issuer, which is barred from becoming a qualified nonprofit health insurance issuer should include any entity:

(1) in which the health insurance issuer either currently holds an ownership interest or has held an ownership interest within the last five (5) years;

(2) that either currently holds an ownership interest in the health insurance issuer or has held such an ownership interest within the last five (5) years; or

(3) which is formed or operated in a manner that is intended to circumvent the requirements of section 1322.

H. Response to Questions under Heading H

Question (1)

The term "consumer" is used in the statute to achieve the CO-OP acronym and the statute directs that a qualified nonprofit insurer should operate with a strong "consumer" focus. The definition of consumer, however, seems obviously to mean either a "member" beneficiary or (since it can't be precisely the same as member, but broader) a potential member. Thus the question is: how can the applicant show its commitment to those who will use its services?

A governance structure that is dominated by members should achieve this result. Persons who are active in other areas of public life but not members are not likely to properly balance all the issues of beneficiary demand, for example, against the financial and other business restrictions of a well-run company. A Board comprised almost entirely of members who use its services, in the rich but not widely understood history of cooperatives, can achieve this democratic result.

A forced involvement of certain citizens who demonstrate admirable public attributes as ombudsmen in other areas but who do not have the direct pressures of running a business that affects directly the care received by their family should not be forced on the board. Current members can speak most eloquently for potential members; any other formulation is artificial and doomed to failure.

In terms of practical measures, the CO-OP may help ensure a strong consumer focus through the following: (1) governance structure; (2) creating member-sourced advisory boards; (3) developing peer-sourced oversight boards; (4) Web design focus; (5) customer service functionality; (6) transparency; (7) creation of member feedback mechanisms; and (8) for prospective board members: questionnaires, previous non-profit board experience, nature of previous board missions, and affidavits by previous fellow board members. The CO-OP may also ensure responsiveness to diverse populations by developing a multi-lingual capacity across all services, promoting cultural awareness and sensitivities, and population-targeted outreach and services.

Question (2)

The regulations should not too tightly constrict governance structure. Anything too prescriptive may work for one organization and fail for five others. Members should control their own destiny within limited parameters. The first is that members should at all times hold at least a supermajority of the seats. The second is that board seats should be the result of contested elections, in which the directors must answer to their constituents for their decisions (which necessarily suggests a process of communication throughout their tenure).

Boards should be structured so that seats turn over gradually to ensure continuity. Accordingly, a board of twelve might be elected for staggered four-year terms (enough time to learn the business he or she is directing, but not so long as to make one too comfortable in the position).

To the degree that outside voices need a forum to communicate openly and clearly to directors, the regulations should require that each CO-OP establish a consumer ombudsman forum, which might take the form of an in-person or virtual quarterly meeting with the CO-OP board to raise questions, express views, or otherwise communicate in a forum open to members and others in the general public. By nature, and by law, the directors will owe a duty of care and loyalty to the CO-OP's members, and not the public outside its membership (which may, after all, be comprised of competitors or other parties specifically forbidden under the statute from "interfering" in the operations of the CO-OP). Nevertheless, such a regular forum may have the leavening effect of hearing from voices that otherwise might not reach the board, while stopping short of requiring that confidential information is not shared with, and board directors are not influenced by, those parties who have conflicting interests.

Options for consumer involvement, beyond electing the board of directors, could include: consumer presence on advisory boards; active community outreach and polling; and open membership and board meetings held with advance warning during evening hours and weekends.

I. Response to Questions under Heading I

The CO-OP's adoption of a demonstrated use of funds policy, target audits, and membership accountability reporting could help ensure that excess revenues are used for members' benefit.

Excess revenues will need to be defined in terms of the statutory requirements of the state in which the qualified nonprofit issuer operates, and the surplus required to meet actuarially sound projections of potential future deficits to the extent those exceed the statutory minimum. Claim reserve and liabilities and minimum risk-based capital requirements need to be fully funded before excess revenue is established. Excess funds can be used to repay loans or grants. Excess funds should generally not be used to lower premiums in subsequent years but could be returned in the form of a refund, or better yet, used to fund activities or functions that could help improve the health of members. Using excess funds in early years to accelerate loan or grant repayment is preferable to distributing surplus in the year earned. This is because health care financing models have traditionally been quite volatile and early profits are not a predictor of continued profits, especially in the absence of appropriate incurred but not reported (IBNR) consideration.

K. Response to Questions under Heading K

The AMA is very concerned that a mechanism be developed that will assist CO-OPs' ability to adequately spread risk, particularly in their early years of operation. A national CO-OP risk pool is one possible mechanism. Another might be a federally-funded CO-OP stop-loss/reinsurance program. Historically, a number of physician-sponsored CO-OPs have succumbed to financial pressures due to adverse selection because of physician commitment to providing needed care to vulnerable populations that were not able to obtain coverage from any other source. Potential mechanisms could, but need not, require purchasing council involvement.

The AMA believes that, in order to ensure that CO-OPs maintain an enduring community focus, all practicing physicians that have a record of dedicated service to the CO-OP's market should be given a reasonable opportunity to participate in any CO-OP serving that market.

Thank you for considering our comments.

Sincerely,

Michael D. Maves, MD, MBA

Attachments

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Economies of scale and scope as an explanation of merger and output diversification activities in the health maintenance organization industry

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Abstract

This paper tests for the existence and magnitude of economies of scale and scope as possible explanations for the recent observed trends in increasing health maintenance organization (HMO) scale (through merger and acquisition) and scope (through greater participation in public enrollee markets) using firm level data from a sample of California HMOs for the time period 1986–1992. The results suggest that economies of scale provide a strong justification for mergers only in the case of relatively small HMOs (i.e. those with fewer than 115,000 enrollees), and economies of scope do not explain the increasing HMO enrollment of public enrollees.

Keywords: Health maintenance organization; Merger; Diversification; Economies of scale; Economies of scope

JEL classification: I1; L1

1. Introduction

The market for health maintenance organization (HMO) services has changed considerably over the last two decades. Two of the more notable changes at the individual HMO firm level are increases in both scale and scope of output.

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Average HMO size (measured in total number of enrollees) has generally been increasing since the mid-1970s. Fig. 1 shows that the rate of growth in average size increased dramatically after 1988, primarily due to consolidation, through mergers and acquisitions, within the industry. The increase in HMO average size is due partly to a reduction in the number of the smallest firms (Kenkel, 1991a). The market share of HMOs with 20,000 or fewer enrollees fell from 8% to 3% between 1988 and 1992 (GHAA, 1994). Increase in average size during this period can be also related to mergers of large HMOs (i.e. enrollment of 100,000 or more), especially in the state of California (Olmos, 1994b). Recently completed and proposed mergers between some of the largest HMOs indicate that this consolidation trend shows no signs of abating in the near future (Anders and Winslow, 1995; Freudenheim, 1995b; Kertesz and Moore, 1995; Los Angeles Times, 1995; Olmos, 1995c).

HMOs have also increased the scope of services provided. One measure of scope is the number of enrollee "markets" served (Morrison and Luft, 1990). The two major enrollee market categories are private (commercial group and individual) and public (including both Medicare and Medicaid). Although not as obvious or dramatic as the increase in average HMO size, there has also been an expansion of enrollee market scope, especially in the last five years. [1]

Prior to 1980 HMOs served commercial enrollees almost exclusively. Federal initiatives and demonstration projects in the early 1980s were designed to encourage HMO enrollment of Medicare and/or Medicaid beneficiaries, but HMO participation in these public programs was minimal. However, by the early 1990s some HMOs had begun to express a greater interest in public enrollee markets (Shuit, 1994). Between 1991 and 1994 the number of HMOs with Medicare enrollees rose from 142 (25% of the total) to 161 (29% of the total). Between 1988 and 1993 the number of HMOs with Medicaid enrollees increased from 118 (19% of the total) to 159 (29% of the total) (GHAA, 1994). The most recent Group Health Association of America (GHAA) annual survey found that many HMOs not currently serving Medicare and Medicaid beneficiaries were planning to begin participation in these programs in the coming year (Anders, 1994).

This paper examines the nature of HMO costs and multiple-output production characteristics in order to elucidate these observed trends in HMO size and enrollee market diversification. A major objective of this analysis is to assess the existence and magnitude of economies of scale and scope in the HMO industry as

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[1] Although this analysis will conceptualize HMO output scope as diversification into different enrollee markets, it is worth recognizing that HMO output scope can be defined in a number of other ways which may result in different findings with respect to the existence and magnitude of economies of scope. For example, output scope defined by type of "insurance" product has also expanded in recent years. Some HMOs now offer workers' compensation, traditional indemnity, preferred provider organization (PPO), POS and long-term care coverage to large group purchasers (Kenkel, 1988b; Sardinha, 1993c). Unfortunately, data are not currently available to study scope defined in this way.
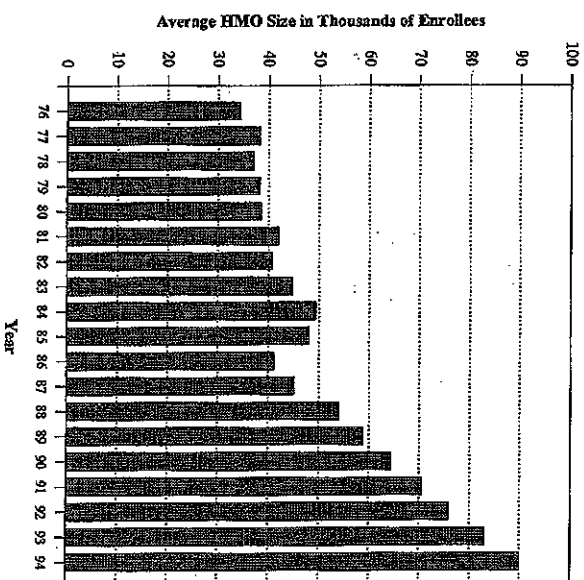
a possible partial explanation for these trends. Specifically, this paper estimates a multiple output translog total (long-run) cost function for a sample of California HMOs for the period 1986 to 1992. [2] Choice of the California HMO industry as a study sample was based on a number of considerations including the large number of HMOs, the substantial variation in HMO and enrollee attributes, and the availability of reliable data on HMO costs, outputs, and other attributes. The California market for HMO services differs in a number of ways from the national experience. [3] However, evolution of the market for HMO services in California may well prefigure developments in many other parts of the country. Although this analysis of California HMOs may not provide results that are currently generalizable to the national population of HMOs, it may provide accurate and policy-relevant predictions for the future.

Fig. 1. Average HMO Size by Year, 1976–1994.

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[2] The study population includes all HMOs licensed in the state of California during this period with the exception of Kaiser Permanente (KP). KP was excluded because it is atypical of the rest of the federal and state HMO industry, given its very large size (over 4 million enrollees) and its long history of operation (41 years in 1986).

[3] In 1991 31.6% of the California population was enrolled in an HMO as opposed to 14.7% nationally. The average HMO size in California was 199,888 (103,650 excluding Kaiser Permanente) vs. 65,263 nationally (Given, 1994).

2. Economies of scale and scope in HMOs and previous research

Economies of scale are said to be present in production when unit (average) cost decreases as the volume of output increases. There are a number of explanations for the presence of economies of scale: (1) the existence of substantial fixed costs; (2) opportunities for specialization in the deployment of resources; and (3) a strong market power position vis-à-vis suppliers of factor inputs. Fixed costs may be related to capital assets such as plant and equipment or non-capital fixed costs such as administrative overhead, including marketing and other operational functions that have substantial fixed cost components. Specialization in the deployment of resources requires a certain volume of output to reach efficient levels. In addition, it seems plausible that larger firms may be able to negotiate lower prices with their suppliers, based on market power, the promise of a continued, long-term business relationship, and actual lower per-unit costs of inputs (volume discounts based on the supplier's costs).

The output of an HMO can be defined as the "comprehensive managed health care per individual enrollee per time period." To produce this output the HMO provides, coordinates, and manages a number of different but complementary services. To simplify, one can say that these services comprise: (1) inpatient (hospital) care services; (2) outpatient care services; and (3) administrative services (utilization and quality management). When assessing the possible sources of economies of scale for HMOs, it is necessary to consider each of these components of HMO production.

Staff and group model HMOs that provide all health care services in their own hospitals and outpatient clinics have relatively high fixed capital and administrative costs, based on construction and operation of these facilities. However, such fully-integrated forms of organization are not representative of HMOs today. While it is fairly common for HMOs to own outpatient facilities, very few HMOs own and operate hospitals. Most HMOs provide inpatient care by contracting with existing local hospitals. HMOs may have high fixed costs, however, with respect to their administrative services. Administrative fixed costs have both capital and non-capital related components. In the past the capital requirements of administration consisted mainly of office facilities needed to carry out the insurance function of the HMO. As the HMO market has become more competitive, large employer groups have pressed for price reductions as well as better information on cost and quality of care. Capital requirements for effective HMO administration have thus grown to include computer-based information systems to monitor and continuously improve the cost and quality aspects of care (Sardinha, 1993a).

In addition, there may be other important fixed-cost components of HMO administration. Regardless of HMO size, firms require a certain minimum level of staff resources to meet the various administrative requirements of operation, such as marketing, underwriting, enrollment, provider contracting, financial accounting and state and federal governmental reporting. Higher cost for smaller firms may

also stem from the insurance function of the HMO. Smaller HMOs are more at risk for the financially adverse effect of a single catastrophic medical event. Although this risk may be reduced through the purchase of reinsurance, the need to purchase such coverage results in higher average administrative costs in smaller HMOs. HMOs face certain administrative "set-up" costs early in their operations, because their administrative structures must be in place and considerable marketing must occur before members can be enrolled. In addition, new HMOs encounter regulatory fixed costs. Most states require HMOs to demonstrate financial responsibility by the establishment of HMO-held reserve funds and state-held deposit accounts. HMOs are also required to maintain minimum levels of tangible net equity, defined as the excess of total tangible assets over total liabilities (Kenkel, 1988a).

Finally, large HMOs may show reduced average costs as the result of advantageous relations with their suppliers of factor inputs. Because larger HMOs can purchase goods and services in greater volume than smaller HMOs, they may be able to benefit from suppliers' lower unit costs, if there are substantial fixed costs in the supply of the particular good or service. Moreover, large HMOs with substantial market power may benefit from purely "pecuniary" economies of scale, being able to negotiate more favorable deals with their suppliers by threatening to withdraw business (Hilzenrath, 1994; Anders, 1995a, Anders, 1995c; Freudenheim, 1995a).

Economies of scope are analogous to economies of scale but imply efficiency gains resulting from expansion of scope (number of different output types) rather than from an increase in the volume of total output. Economies of scope rely, in general, on the existence of a fixed cost, possibly "quasi-public" input that can be utilized in the production of a number of different types of output. Economies of scope measure the cost advantages of diversified production within a single firm versus production by separate firms, each specializing in a single type of output (Bailey and Friedlander, 1982; Baumol et al., 1988).

Little has been published in the area of HMO cost and production behavior. Only two studies have examined the nature of HMO production and cost using firm level data (Bothwell and Cooley, 1982; Schlesinger et al., 1986). Both studies provided evidence for the existence of economies of scale in HMOs, but neither tested for economies of scope.

Bothwell and Cooley (1982) used firm-level data from a national sample of HMOs to estimate a multiple-input, multiple-output translog total cost function. Their sample consisted of a total of 106 quarterly observations from 20 federally qualified staff and group model HMOs for the years 1976 and 1977, ranging in size from 1131 to 37,000 enrollees. Output was defined as the various categories of health care service utilization (i.e. hospital discharges and ambulatory visits with physicians and non-physicians). The authors found evidence of output-specific scale economies for all HMOs and overall scale economies for all but one HMO. Schlesinger et al. (1986) examined HMO average (per enrollee) cost and premium

using data from a national cross-sectional sample of between 80 and 173 HMOs. Average HMO enrollment was approximately 42,000. Information on HMO economies of scale was derived from the four average cost functions estimated, where the dependent variables were average total cost, average hospital cost, average ambulatory cost, and average administrative cost. Increased plan size was related to lower total cost per enrollee. This resulted from reductions in both average ambulatory cost and average administrative cost, as average hospital cost per enrollee was unaffected by HMO size.

These studies suggest that the HMO industry displays increasing returns to scale. There are a number of reasons, however, for adding to the empirical research on this topic. The primary reason is that the market for HMO services has evolved considerably since these studies were completed. As a result, the appropriateness of generalizing from previous research findings to the HMOs operating within the current regulatory and competitive environment should be seriously questioned (Gabel et al., 1987; Miller and Luft, 1994).

Although both of the studies described above examined national samples of HMOs, they are more limited than the present study. Bothwell and Cooley, for example, restricted their sample to HMOs that were both federally qualified and staff/group models. It would be difficult to generalize their findings to the HMO population of today, which is dominated by Independent Practice Association (IPA) and network model HMOs. In addition, their sample included no HMOs with more than 40,000 members. The current interest in HMO economies of scale is related partly to the expectation that the ongoing wave of HMO consolidation stems from the efficiency-increasing and/or quality-increasing effects of mergers that create very large and geographically broad-based HMOs. [4] Therefore, even if there had been no change in the external environment in which HMOs operate, changes in the HMO industry itself would make it difficult to apply the result of their analysis to the current situation.

3. Model specification and data sources

The economic model to be used views the HMO as a firm using multiple inputs to produce multiple outputs:

$$F(y_1,...,y_m; x_1,...,x_n) = 0 \qquad (1)$$

where y_i are the outputs and x_j are the factor inputs. If the following conditions are met: (1) the firm minimizes costs; (2) actions of the firm do not affect input

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[4] Today's post-merger HMOs may have as many as 1 million enrollees; even pre-merger HMOs frequently have more than 40,000 members.

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prices; and (3) isoquants are convex; then a dual cost function will exist that is of the following form:

$$C = C(y_1,...,y_m; p_1,...,p_n) \qquad (2)$$

where y_i are the outputs and p_j are the prices of the factor inputs.

This model formulation implies that output quantities are exogenously determined. If this is not the case, however, parameter estimates may be biased. One way to address this potential problem is to specify instruments for the output variables. The value of such a technique, however, is highly reliant on the ability to identify variables/data sources to serve as appropriate instruments for all HMO outputs (Bresnahan, 1989; Nelson and Startz, 1990; Bound et al., 1993). As a result this paper relies on the assumption of output exogenity but recognizes the attendant caveats associated with this approach.

The properties of the cost function are:

1. C is non-decreasing in y_i and p_j;
2. C is linear homogeneous in p_j;
3. C is concave in p_j;
4. $dC/dp_j = x_j$ (Shephard's lemma).

The total (long-run) cost function is assumed to be of the following form:

$$TC = C(Q,P,C) \qquad (3)$$

where the variables are defined as follows.

TC = total annual HMO expenses.

Q is the vector of outputs, where: Q_M = average annualized Medicare enrollees (cumulative annual Medicare enrollee member months divided by 12); Q_M = average annualized Medi-Cal enrollees (cumulative annual Medi-Cal enrollee member months divided by 12); Q_C = average annualized commercial enrollees (cumulative annual commercial enrollee member months divided by 12).

P is the vector of input prices, where: P_H = price of hospital services, defined as the average net revenue per day of hospital care in the market area served by the HMO; P_P = price of professional inputs, defined as the average price per primary care office visit in the market area served by the HMO; P_A = price of administrative labor, defined as an index for secretarial and other clerical hourly wages in the market area served by the HMO; P_K = price of capital/facilities, defined as the average rental/other cost per square foot of general business office space in the market area served by the HMO.

C is a vector representing control variables (HMO attributes and environmental factors that can be expected to affect cost) where the following are HMO attributes: AGE = the number of the years that the HMO has been in operation; $NETWORK$ = an index that reflects the extent of an HMO's provider network by using measures of the geographic/population based market area served by the HMO; FOR-$PROFIT$ = a dummy variable for ownership status (vs. non-profit);
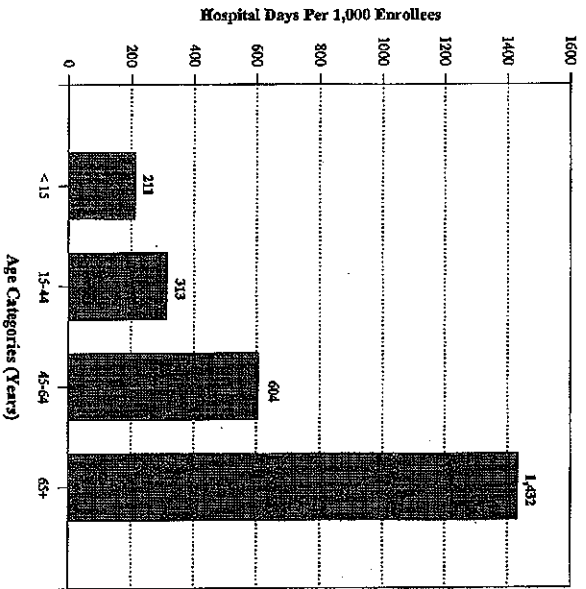
Fig. 2. Hospital Days Per 1000 HMO Enrollees, 1991.

FEDERAL QUAL = a dummy variable for federal qualification status (vs. not federally qualified); POINT-OF-SERVICE = a dummy variable for the HMO offering a point-of-service (POS) option to enrollees (vs. not offering a POS option); NON-IPA = a dummy variable for HMO model type (vs. pure-IPA model HMO); and the following are environmental factors: TIME = an annual time trend variable for the period of the sample, starting with 1986 = 1 and ending with 1992 = 7; COMPETITION = the level of HMO competition, measured by the total number of HMOs operating in the market area served by each HMO.

Output is specified as average annualized HMO enrollee by type: commercial, Medicare or Medi-Cal (California's Medicaid program). This variable is defined as the total annual member months in each category divided by 12 so as to adjust for the measurement error associated with fractional/transitory enrollment in any given year. The costs of "producing" these three different types of output vary considerably. In particular, Medicare enrollees should have a substantially higher rate of hospitalization and therefore much higher costs of care than either of the other types of enrollees. Fig. 2 provides a comparison of hospital utilization (days per 1000 population) for four age categories of HMO enrollees in 1991 (GHAA, 1993). The rise in utilization (and therefore in expected cost) with increasing age underscores the importance of creating separate output categories for HMO enrollees under and over the ages of 65.

The HMOs in the sample vary in their mix of outputs. A few firms have all three types of enrollees, but most have only two types, and some have only commercial enrollees. The fact that outputs for some observations have zero values creates an apparent problem, because the translog functional form used for estimation does not allow zero values for any logged variables. However, a multiple-output cost function can be estimated effectively by substituting very low positive values for the zero output levels. A number of different approaches have been suggested to deal with this problem (Berndt and Khalid, 1979; Caves et al., 1980; Fuss and Waverman, 1981). The present study substitutes 0.00001 for all outputs where the value is zero.

Factor input prices are defined as the prices of hospital care, physician services, administrative wages, and capital/facility related services prevailing in each HMO's estimated geographic market area. Because HMOs vary both in degree of vertical integration and in methods of contracting with providers, not all HMOs will face hospital and physician input prices exactly as specified in the model. For example, the model specifies that physician inputs are purchased on a "per-visit" basis, whereas, depending on HMO model-type, physician prices actually may be based on an annual full-time equivalent (FTE) salary (staff model HMOs) or on an annual capitated rate per enrollee (for group, network, and some IPA model HMOs). However, since the market for HMO medical care-related input factors is local, it is assumed that the geographically-based variables of hospital price "per-day" and physician price "per-visit" will provide good approximations of the relative prices faced by all HMOs. [5]

In addition to the standard components of an economic cost function, this model also includes variables to control for HMO-specific and general/local environmental effects on cost. Before describing the control variables included, it is useful to comment on an important variable that could not be included, i.e. quality. Since HMOs have strong incentives to minimize costs, it is possible that poor quality (e.g. through restriction of access to services) could be mistaken for greater efficiency or scale effects, if quality were inversely related to HMO size (Hillman et al., 1993). [6] Data on HMO-specific quality are unavailable for the study sample. However, there is no strong evidence at the present time that larger

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[5] This definition of input prices assumes that firm size (output volume) does not affect factor input prices faced. However, because of market power, larger HMOs may face lower prices, thus contributing to "pecuniary" economies of scale. Unfortunately, since firm-specific input price data are not available, it is impossible to test specifically for the presence of this type of scale effect. If larger HMOs receive greater price discounts, then use of the general, geographically-based input prices will overstate prices faced by the larger HMOs. As a result, the output-specific costs of larger HMOs would be understated, relative to output-specific costs of smaller HMOs. Thus, assuming that all sizes of HMOs face the same input prices may exaggerate the relative efficiency of larger vs. smaller HMOs. It is not clear, however, that this problem will necessarily bias the results on determination of minimum efficient scale (Shepherd, 1983).

[6] Lower cost could also indicate the presence of selection bias. See Given (1994).

HMOs provide substantially lower quality of care than do smaller HMOs. Although measurement of HMO quality is very problematic, future cost analyses may be able to incorporate limited information on quality as the result of ongoing quality indicator development and data collection efforts (Anders, 1995b; Olmos, 1995b).

Given this problem, a number of other variables were included that might serve as partial proxies of quality. HMO age may be related to unobserved HMO attributes that increase the probability of survival, such as superior product ''quality'', as perceived by enrollees. If HMO age reflects quality, older HMOs would have higher costs. On the other hand, if age represented acquired expertise in efficient production, it would have a negative effect on average cost. Although an imperfect measure, federal qualification status is frequently used in HMO cost analysis to control for generosity of HMO benefits, since federally qualified HMOs provide a richer benefit package than required by state regulations. The presence of enrollees with a ''point-of-service'' (POINT-OF-SERVICE) option would be expected to result in an increase in cost. The use of non-HMO network providers by POINT-OF-SERVICE enrollees limits an HMO's ability to monitor and manage utilization for enrollees with this option, which is key to HMO control of costs.

In addition to quality, other measurable HMO attributes were hypothesized to affect cost. HMO model type has, at least in some previous studies, appeared partially to explain variation in HMO costs (U.S. Congress Congressional Budget Office, 1995). The extent/geographic breadth of an HMO's provider network might be expected to increase average costs as a result of the higher administrative fixed costs required to monitor a large number of provider contracts. For-profit status could result in either higher or lower average costs. For-profit HMOs are expected to have lower costs of capital because of greater access to financial markets. However, recent analysis of HMO medical-loss ratios indicates that for-profit HMOs may have higher levels of administrative costs and profits/surplus than do non-profit HMOs (California Medical Association, 1994).

The model also includes two additional variables to control for the HMO cost effects of variation in the general and local environment. TIME, an annual time trend measure, functions to control for a number of otherwise unobserved factors varying over this period. These include demand-side and other effects of the business cycle, changes in the federal and/or state regulatory policy and developments in medical technology. In addition the model includes a variable for the level of HMO competition faced by each firm. Level of HMO competition is defined as the total number of HMOs operating in each firm's market area. In theory, a higher level of HMO competition would be expected to have a negative effect on HMO cost.

The data for this study come from a wide variety of sources. The core data are from reports filed by all licensed HMOs with the California State Department of Corporations (DOC). The data elements acquired from the DOC are: (1) HMO

Table 1
Comparison of study sample with California HMO population, 1991

	California HMO population		Study sample of HMOs[b]
	With Kaiser Permanente	Without Kaiser Permanente[a]	
N:	42	40	31
Average size (enrollees)	234,997	128,082	146,434
Average age (years)	12.7	11.1	12.3
Percent by area[c]			
Los Angeles Basin	47.6%	47.5%	48.4%
San Francisco Bay	28.6%	27.5%	22.6%
Other	23.8%	25.0%	29.0%
Percent federally qualified	64.3%	62.5%	74.2%
Percent for-profit	61.9%	64.9%	80.6%
Percent by model type:			
IPA	54.8%	57.5%	67.8%
Group	9.5%	5.0%	3.2%
Network	16.7%	17.5%	19.3%
Staff	9.5%	10.0%	3.2%
Mixed (IPA)	9.5%	10.0%	6.5%
Medicare enrollees			
Percent with any Medicare	59.5%	57.5%	67.8%
Average percent Medicare	6.0%	5.8%	7.2%
Medi-Cal enrollees			
Percent with any Medi-Cal	26.2%	22.5%	19.3%
Average percent Medi-Cal	10.8%	11.3%	6.7%

Sources: InterStudy, 1992; California State Department of Corporations.
[a] Each Kaiser region (northern and southern California) is considered a separate HMO.
[b] The excluded HMOs (in addition to Kaiser) are: Contra Costa Health Plan, Community Health Plan, Community Health Group, Blue Shield, Prudential, Preferred Administrators (Coast), CaliforniaCare, Modern Health Systems, and Santa Clara Valley Health Plan.
[c] Area refers to the location of the HMO's headquarters. The majority of an HMO's enrollees are typically found in the same general area as its headquarters.

expenses by category required to compute the total cost and cost shares; and (2) HMO quantity of output by output-type (commercial, Medicare, and Medi-Cal average annualized enrollees). Inconsistencies in reporting and missing reports made it necessary to exclude a number of HMOs from the sample for analysis. Table 1 provides a comparison of the HMOs in the sample with those representing the total population of HMOs in California for the year 1991.

Data on the HMO attributes AGE, POINT-OF-SERVICE, FEDERAL QUAL, PROFIT, NON-IPA, and NETWORK come from a number of sources, including the DOC, the California Department of Finance (DOF), InterStudy, GHAA, and the California Association of HMOs (CAHMO). These data elements (with the exception of NETWORK) are available on an annual basis from one or more of the sources listed above.

The variable measuring HMO geographic network size is not directly available from any of the data sources listed above and therefore must be inferred from other information. The *NETWORK* index measures geographic breadth of operations within each state and is calculated as a function of the number of California counties in which the HMO operates and the relative size (in population) of those counties. Sources of data on HMO county presence are annual surveys and directories published by InterStudy, CAHMO, and GHAA. California county population data came from publications of the DOF.

The level of HMO competition is not an HMO attribute per se, but is a characteristic of the geographic market area(s) in which it operates. Since most HMOs operate in more than one part of the state, it is necessary to create a definition of market area that reflects this. For any particular HMO the level of competition it faces is a function of the number of HMOs operating in the same counties and the relative populations of those counties. Specifically, the level of HMO competition is approximated as the average of the total number of HMOs operating in the market area of each HMO, weighted by relative county size (population). [7]

The remaining elements in the data set, the factor input prices, are not available on an HMO-specific basis. Since these prices can vary considerably throughout the state, it is important to account for this variation when attributing them to different HMOs. The values of these variables assigned to each HMO are computed as a weighted average of the factor input prices in the different geographic areas in California where the HMO operates.

Price per hospital day is approximated by net revenue per non-Medicare, non-Medi-Cal day in a general, acute care hospital and is available annually from the California Office of Statewide Planning and Development. The physician visit price variable was created by applying SMSA-specific changes in the ''medical services'' Consumer Price Index (CPI) to California county-specific Medicare prevailing charge data from 1983 to project estimated local visit prices for the late 1980s and early 1990s. [8] The price of administrative services is approximated by a

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[7] Ideally, the market area weighting should be based on the proportion of an HMO's operations that occur in each area. This might perhaps best be proxied by the percentage of an HMO's membership residing within each geographic area. Unfortunately, HMO membership by county/SMSA is currently not available either to the general public or to researchers. Given this data limitation, weighting of these area-specific variables is based instead on relative county population weights rather than HMO-specific membership weights. Lack of county-specific HMO enrollment data precludes the creation and use of a Herfindahl–Hirschman Index (HHI) as a measure of competition.

[8] Medicare charges have been, in general, constrained by the Medicare Economic Index (MEI) since 1974 and therefore may not reflect variation in physician charges faced by the non-Medicare population. However, certain categories of prevailing charges for the early 1980s are available in a form unadjusted by the MEI. One such category of charges, ''limited initial visit to a non-specialist provider'', was used as the basis of physician visit price.

standard metropolitan statistical area (SMSA)-specific index of clerical hourly occupational wages taken from annual Area Wage Surveys and Occupational Compensation Surveys published by the Bureau of Labor Statistics. The capital/facility price variable was created by applying SMSA-specific changes in the residential rental CPI to 1992 California metropolitan area-specific business office cost per square foot to infer estimated capital/facility related prices for the period prior to 1992. Information on 1992 business office costs is available from Oncor International, a private firm specializing in real-estate information services. [9]

The econometric model used for this study is of the following translog form:

$$\log TC = a_0 + \sum_{i=1}^{m} \alpha_i \log Y_i + \sum_{j=1}^{n} \beta_j \log P_j + \sum_{h=1}^{r} \lambda_h \log C_h$$
$$+ \frac{1}{2} \sum_{i=1}^{m} \sum_{l=1}^{m} \delta_{il} \log Y_i \log Y_l + \frac{1}{2} \sum_{j=1}^{n} \sum_{k=1}^{n} \gamma_{jk} \log P_j \log P_k$$
$$+ \sum_{i=1}^{m} \sum_{j=1}^{n} \rho_{ij} \log Y_i \log P_j + \sum_{h=1}^{r} \sum_{l=1}^{r} \theta \log P_j \log C_h$$
$$+ \sum_{h=1}^{r} \sum_{l=1}^{n} \phi_{ih} \log Y_i \log C_h + \varepsilon \qquad (4)$$

where *TC* is the total cost, Y_i denotes the outputs, P_j denotes the input prices, C_h denotes the control variables, α_0, α_i, β_j, λ_h, δ_{il}, γ_{jk}, ρ_{ij}, θ_{jh} and ϕ_{ih} are the parameters to be estimated and ε is the disturbance term. Since the function is a second-order approximation, the following symmetric relationships hold: $\delta_{il} = \delta_{li}$ and $\gamma_{jk} = \gamma_{kj}$. All variables are divided by their sample means so that the parameters can be interpreted as elasticities.

Although the total cost function can be estimated with the single equation (Eq. (4)), the assumption of cost minimization allows the use of a multiple equation system that greatly enhances the efficiency of the estimates. Shepherd's lemma,

$$x_i = \frac{\partial TC}{\partial p_i} \qquad (5)$$

can be used to derive a set of factor cost share equations:

$$\frac{\partial \log TC}{\partial \log P_j} = \frac{P_j X_j}{TC} = S_j \qquad (6)$$

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[9] For a more detailed description of the data sources and methods used to create the price variables, see Given (1994).

The cost share equations are of the following form:

$$S_j = \beta_j + \sum_k \gamma_{jk}\log P_k + \sum_i \rho_{ij}\log Y_i + \sum_h \theta_{hj}\log C_h + e_j \qquad (7)$$

where all of the terms are the same as defined above and e_j is the disturbance term for the jth factor share equation. Since the S_j are cost shares, the sum of all cost shares must be equal to one. This implies that

$$\sum_j \beta_j = 1 \qquad (8)$$

and

$$\sum_k \gamma_{jk} = \sum_i \rho_{ij} = \sum_h \theta_{hj} = 0 \qquad (9)$$

This implies a singular covariance matrix for the system of equations, unless one of the cost share equations is eliminated. For this estimation the capital/facility cost share equation is excluded.

In addition, the cost function must be homogenous of degree one in input prices. In addition to the restrictions above, this implies that:

$$\sum_k \gamma_{jk} = 0 \qquad (10)$$

This last restriction can be imposed by normalizing prices and costs using one input price as a numeraire. The factor input price used as the numeraire is that of the excluded cost share equation, the price of capital/facility services.

Errors across the cost share equations are expected to be contemporaneously correlated, implying that the variance–covariance matrix is non-diagonal. For this reason, the appropriate estimation method is a variant of generalized least squares, "seemingly unrelated regressions" (SUR). The total cost equation is estimated together with the three cost share equations as a multivariate regression system, using the two-step SUR process. It has been shown that iterating the two-step Zellner procedure until convergence results in maximum likelihood estimates that are invariant to the cost share equation that is eliminated (Oberhofer and Kmenta, 1974; Berndt, 1991).

4. Empirical results and discussion

The basic descriptive statistics of the non-logged variables appear in Table 2. The remaining exhibits utilize the results of the translog total cost function to provide information on the existence and magnitude of economies of scale and scope. Table 2 provides a description of the "average" HMO in the study

Table 2
Descriptive statistics

	Mean	Standard deviation
Input prices		
Hospital day	$1428	$314
Physician visit	$56	$8
Clerical wage index	$10	$1
Facility cost per square foot	$23	$3
Output quantities		
Total enrollees	115,182	169,977
Commercial enrollees	96,145	143,533
Medicare enrollees	13,685	38,766
Medi-Cal enrollees	5352	15,041
Other firm attributes		
Network size index	14.7	14.2
Age (years in operation)	10.8	12.1
Point of service option	17.4%	
Federally qualified	74.9%	
For-profit status	81.2%	
Non-IPA model	48.6%	
Environmental factors		
Level of HMO competition	12.5	4.9
N	138	138

sample.[10] Tables 3 and 4 provide information on the HMO production characteristics of returns to scale and scope for the average HMO, or where all variables are at their sample means. Table 3 shows the translog total cost function first-order coefficients for all variables in the model. Since variables are normalized by their mean values, these results represent the total cost elasticities at the sample mean.

Of most interest for this analysis are the total cost elasticities with respect to output, which provide evidence on output-specific and overall returns to scale for the average study HMO. Output-specific total cost elasticities are defined as:

$$TCE(i) = \frac{\partial \ln TC}{\partial \ln Y_i}\bigg|_{Y_l,\, l \neq i}\text{ constant,} \qquad (11)$$

where TC = the total cost function and Y_i, $i = 1, \ldots, m$ are the output categories of Commercial, Medicare, and Medi-Cal enrollees. Output-specific total cost elasticities represent the percent change in total cost that occurs with a one percent change in the volume of the particular output, holding all other outputs, prices and

[10] Most HMO observations in the study sample reflect enrollment of fewer than 100,000 enrollees. However, about 28% of HMO observations (38 out of 138) show more than 100,000 enrollees, 13% (18) have over 300,000 enrollees, and about 6% (8) have more than 500,000 enrollees.

Table 3
Total cost elasticities at sample mean (translog total cost function first order coefficients)

Parameter	Estimate	Standard error	t-statistic
Input prices			
Hospital day	0.290	0.016	18.243
Physician visit	0.511	0.015	35.068
Clerical wage index	0.160	0.014	11.667
Facility cost	0.038	0.008	4.644
Output quantities			
Commercial enrollees	0.607	0.109	13.435
Medicare enrollees	0.253	0.019	2.859
Medi-Cal enrollees	0.111	0.039	5.549
Total enrollees [a]	0.971	0.105	0.276
Control variables			
Network size index	0.007	0.109	0.056
Age	0.019	0.106	0.177
Point of service option	−0.020	0.012	−1.582
Federally qualified	−0.002	0.018	−0.097
For-profit status	−0.029	0.026	−1.106
Non-IPA model	−0.007	0.005	−1.338
Time trend	−0.078	0.090	−0.872
Level of HMO competition	0.931	0.259	3.590

[a] The t-statistic for "total enrollees" measures test of significance of difference from one, not zero.

control variables constant at their mean levels. Table 3 shows that all TCE(i) are positive and significantly different from zero at $p = 0.01$.

If it is assumed that all outputs are increased proportionally, then an overall measure of total cost elasticity would be the sum of all TCE(i) or

$$TCE = \sum_{i=1}^{m} \frac{\partial \ln TC}{\partial \ln Y_i}$$ (12)

for all m outputs. Although TCE is 0.971, this value is not significantly different

Table 4
Economies of scope: Parameter estimates for test of weak cost complementarity

Output pair	Parameter estimate	Standard error	t-statistic
Commercial and Medicare enrollees	0.147	0.027	5.339
Commercial and Medi-Cal enrollees	0.060	0.025	2.387
Medicare and Medi-Cal enrollees	0.027	0.010	2.673

from one. Overall or ray scale economies (RSE) are usually defined as the inverse of the overall total cost elasticity or

$$RSE = \frac{1}{TCE}$$ (13)

Since TCE and, thus, RSE for this sample do not differ significantly from one, we can conclude that the average HMO is operating in a region of constant returns to scale.

The only control variable with either a large or a significant effect on cost is level of HMO competition. Despite expectations that level of competition would have a *negative* effect on cost, the results suggest a strong *positive* relationship with cost. These results at first glance seem inconsistent with what little empirical research has been done to date on the relationship between HMO level of competition and HMO costs. Wholey et al. (1995) assessed the effect of level of HMO competition on HMO price (defined as premium revenue per enrollee) for a national sample of HMOs for the period 1987–1991. They found that higher competition was associated with lower premiums, and presumably, lower costs.

The most obvious reason for conflicting findings is omitted variable bias. The Wholey et al. model included variables to: (1) capture the effects of local morbidity/practice intensity (average Medicare Part A expenditures); and (2) control for the expected degree of HMO favorable selection (HMO population penetration). These two variables had highly significant positive effects on the premium levels. Although the present study controls for variation in heath care factor input price variation, it does not include similar variables. However, average Medicare expenditures and HMO population penetration are highly positively correlated with level of HMO competition in the state of California (Welch et al., 1993; GHAA, 1994). This association raises the possibility that level of competition may indeed be endogenous, with HMOs choosing to locate in geographic regions with higher medical costs.

Table 4 provides information on returns to scope, also at the mean level for the sample of HMOs. A sufficient condition for economies of scope at mean values is existence of weak cost complementarities (WCC), or the situation where

$$\frac{\partial^2 TC}{\partial Y_i \partial Y_l} < 0$$ (14)

for a given pair of outputs, i and l, and where TC is the total cost function (Fuss and Waverman, 1981; Vita, 1990). Since

$$\frac{\partial^2 TC}{\partial Y_i \partial Y_l} = \frac{TC}{Y_i Y_l} \left(\frac{\partial \ln TC}{\partial \ln Y_i} \frac{\partial \ln TC}{\partial \ln Y_l} + \frac{\partial^2 \ln TC}{\partial \ln Y_i \partial \ln Y_l} \right)$$ (15)

the test of WCC or the existence of economies of scope for the translog total cost function is
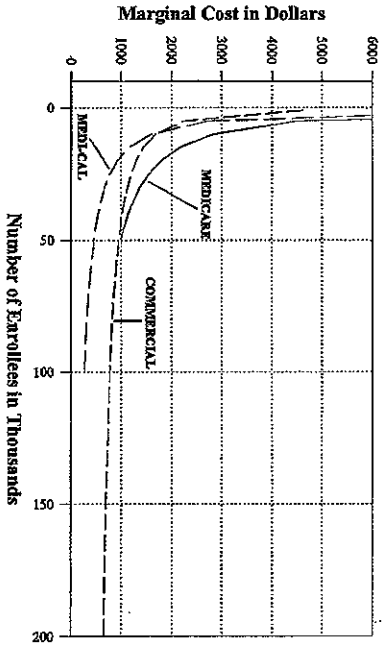
$$\alpha_i \alpha_l + \delta_{il} < 0$$ (16)

The estimated parameter values, approximate standard errors, and t-statistics for this test for all possible output pairs appear in Table 4. [1] All parameter estimates are significantly positive. Not only do we not observe evidence of *economies of scope*, the positive values of all three output pairs indicate the presence of *diseconomies of scope*. Although all pairs show diseconomies of scope, the greatest degree of diseconomy appears in the case of joint production of Medicare and commercial enrollees. These findings are consistent with those of Wholey et al. (1996), based on a national sample of HMOs for roughly the same time period. The apparent presence of diseconomies of scope in both studies is unexpected and puzzling, given HMOs' expressed interest in increasing enrollee market diversification. More detailed examination and discussion of production characteristics by HMO category below provide some possible explanations for these findings.

The remaining exhibits present information on HMO costs and production characteristics from simulations where the scale and scope of output are varied. Fig. 3 shows the effect of scale (i.e. increasing output volume) on output-specific marginal cost (*MC(i)*) for each type of output, where

$$MC(i) = \frac{\partial TC}{\partial Y_i} = \left(\frac{\partial \ln TC}{\partial \ln Y_i}\right)\left(\frac{\hat{C}}{Y_i}\right)$$

TC and *Y_i* are as defined previously for Eq. (11) and Eq. (12) and $\hat{C}$ is defined as fitted total costs. For each type of output, volume is increased, but all other variables (including other outputs) are held constant at their mean values. Al-

Marginal Cost in Dollars

Fig. 3. Output Specific Marginal Costs.

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[1] This method of assessing economies of scope has been used for various public and private service industries, including fire protection (Duncombe and Yinger, 1992), police (Gyapong and Gyimah-Brempong, 1988), and credit unions (Murray and White, 1983).

though not shown graphically, commercial enrollee-specific marginal cost declines throughout the size range of HMOs with any commercial enrollees (maximum size in the study sample is about 850,000 enrollees). Fig. 3 provides information on output-specific marginal costs for HMO sizes below 200,000 enrollees in order to show relationships among the three types of marginal cost for the majority of the HMOs in the study sample, which fall into this size range.

The simulation results presented in Fig. 3 are consistent with Medicare and Medi-Cal enrollees having higher fixed costs than commercial enrollees, perhaps because of the additional administrative and other fixed cost requirements for HMO participation in these public programs. As scale increases, variation in marginal cost by output type is as expected, given the underlying age–sex composition of each type of enrollee. Based on the hospital utilization by age category presented in Fig. 2, Medicare enrollee marginal cost would be expected to exceed commercial enrollee marginal cost, which in turn would be expected to exceed Medi-Cal enrollee marginal cost, as is observed in Fig. 3.

Table 5 presents measures of scale (HMO size in total enrollees,), scope (enrollee percentage distribution by type), RSE, and output specific marginal cost (*MC(i)*) for four mutually exclusive types of HMOs for 1991. These results are fairly consistent over all years of the analysis, although output-specific marginal cost trends up over time. While in general HMO size varies considerably within each of the four types, HMOs "specializing" in Medi-Cal enrollees show less variation in size and appear consistently smaller than the other three HMO types. Classification of HMOs with Medicare enrollees by contract type reveals risk contract plans to have a considerably higher proportion of Medicare enrollees (mean = 25.6%, s.d. = 8.1%) than non-risk contract plans (mean = 2.8%, s.d. = 2.2%).

The RSE values suggest that there are increasing returns to specialization. Single-output HMOs (i.e. those with commercial enrollees only) have the highest mean RSE and all other HMO types with greater output scope have lower mean RSEs. In addition to RSE means and standard deviations, Table 5 also presents the 95% confidence intervals for RSE by HMO type. These indicate that either type of Medicare contract HMO with Medicare is more likely to be operating in a region of decreasing returns to scale (i.e. where *RSE* < 1.0) than are HMOs with commercial enrollees only or those specializing in Medi-Cal enrollees.

Although there is considerable variation in output-specific HMO marginal cost within HMO type, these costs do differ by HMO type. The marginal cost of commercial enrollees appears higher in HMOs with a Medicare risk contract than in HMOs with commercial enrollees only or with a Medicare non-risk contract. Additionally, the marginal cost of Medicare enrollees appears to be lower in HMOs with Medicare risk contracts than in HMOs with Medicare non-risk contracts.

HMOs with a large proportion of Medicare enrollees and low marginal cost should be willing to participate in a risk contract (where the HMO is capitated for

Table 5
Average measures of scale, scope, RSE and output-specific marginal cost by HMO type, 1991

		HMO type [a]			
		HMOs with commercial enrollees only	HMOs with Medicare non-risk enrollees	HMOs with Medicare risk enrollees	HMOs specializing in Medi-Cal enrollees
N		4	11	4	3
Scale					
Total enrollees	mean	248,839	116,593	306,055	55,578
	(s.d.)	(397,400)	(163,649)	(312,978)	(19,185)
Scope					
Percent commercial	mean	100.0%	94.9%	73.8%	34.1%
	(s.d.)		(6.1%)	(9.0%)	(16.3%)
Percent Medicare	mean	0.0%	2.8%	25.6%	5.1%
	(s.d.)		(2.8%)	(8.1%)	(8.9%)
Percent Medi-Cal	mean	0.0%	2.2%	0.7%	60.8%
	(s.d.)		(5.6%)	(1.4%)	(7.7%)
RSE	mean	1.42	1.26	1.20	1.09
	(s.d.)	(.12)	(.19)	(.14)	(.03)
	95% CI	[1.22–1.62]	[0.95–1.57]	[0.97–1.43]	[1.04–1.14]
Marginal cost for					
Commercial enrollees	mean	$873	$755	$1434	$3679
	(s.d.)	($65)	($188)	($418)	($3155)
Medicare enrollees	mean		$17,419	$2034	$3881
	(s.d.)		($12,258)	($592)	
Medi-Cal enrollees	mean		$1719	$11,527	$338
	(s.d.)		($799)		($144)

[a] HMO types reflect mix of enrollees. The column headings should be generally self-explanatory with the exception of the last category, HMOs specializing in Medi-Cal enrollees. These are HMOs where 40% or more of the total membership are Medi-Cal enrollees.

Medicare enrollees, based on the local Medicare fee-for-service (FFS) cost experience). For this sample of HMOs, the marginal cost of Medicare enrollees in HMOs with risk contracts is less than the annual capitated payment rate, while the marginal cost of Medicare enrollees in HMOs with non-risk contracts appears well above the annual capitated payment rate (Feldman et al., 1993; Given, 1994) with Medicare non-risk contracts.

The results presented in Table 5 regarding the variation in marginal cost for commercial enrollees provide additional support as well as a possible explanation for the findings of diseconomies of scope for joint production of commercial and Medicare enrollees. The marginal cost of commercial enrollees is considerably and consistently lower in HMOs with commercial enrollees only and in HMOs with Medicare non-risk enrollees than in HMOs with Medicare risk contract enrollees. Thus, diseconomies of scope appear most severe in joint production of commercial

and Medicare risk enrollees. It is therefore useful to consider how Medicare risk contract HMOs differ in their operations from HMOs in the other two categories.

One possible explanation for a finding of diseconomies of scope is that they reflect unmeasured variation in output quality between firms with different scope of output. The hospital cost literature has reported diseconomies of scope between emergency department services and general inpatient services (Grannemann et al.,
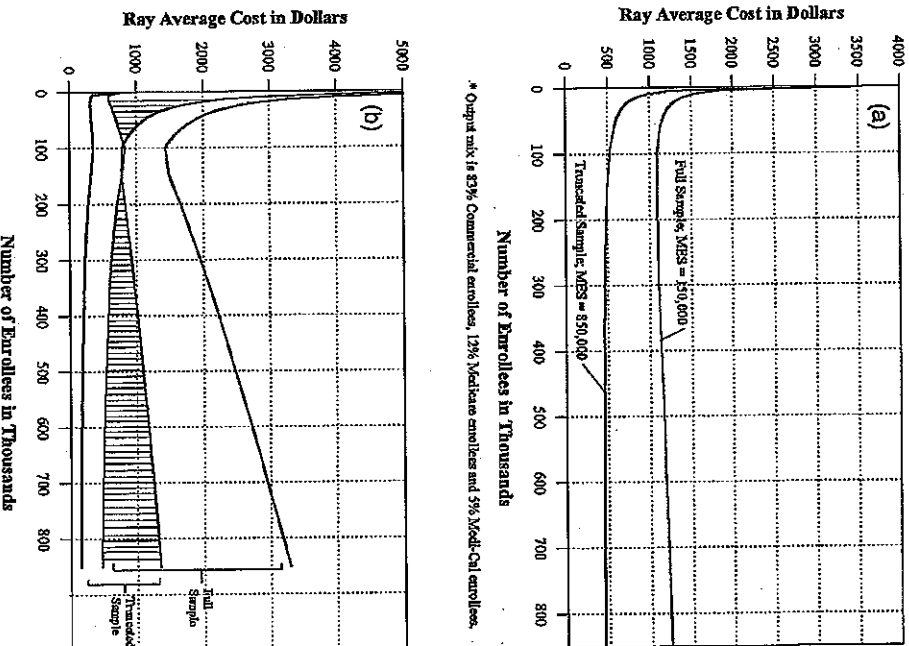
(a) Ray Average Cost in Dollars
(y-axis: 0, 500, 1000, 1500, 2000, 2500, 3000, 3500, 4000; x-axis: Number of Enrollees in Thousands, 0–800)
Full Sample, MES = 150,000
Truncated Sample, MES = 850,000
* Output mix is 83% Commercial enrollees, 12% Medicare enrollees and 5% Medi-Cal enrollees.

(b) Ray Average Cost in Dollars
(y-axis: 0, 1000, 2000, 3000, 4000, 5000; x-axis: Number of Enrollees in Thousands, 0–800)
Full Sample; Truncated Sample
* Output mix is 83% Commercial enrollees, 12% Medicare enrollees and 5% Medi-Cal enrollees.

Fig. 4. (a) Ray Average Cost for HMOs with Multiple Outputs (Output mix is 83% Commercial enrollees, 12% Medicare enrollees and 5% Medi-Cal enrollees.) (b) 95% Confidence Intervals: Ray Average Cost for HMOs with Multiple Outputs (Output mix is 83% Commercial enrollees, 12% Medicare enrollees and 5% Medi-Cal enrollees).

1986). While Grannemann et al. recognized that observed diseconomies of scope might be related to a real increase in costs due to management inefficiencies in large hospitals providing emergency services, they also suggested that their findings might be explained by variation in output quality (and cost) not captured by case mix measures used for their analysis. Joint production would be associated with higher costs because the presence of an emergency department in a large hospital could be expected to generate more complex and costly emergency department visits and inpatient hospital cases.

Unmeasured variation in quality could also help explain the apparent diseconomies of scope for HMOs. Additional variable and fixed costs associated with the marketing and operation of a Medicare risk program could be expected to contribute to increased costs of joint production. HMOs with Medicare risk programs may also have a different mix of commercial enrollees than do other HMOs. By concentrating their efforts on providers and delivery system features that appeal to an elderly population, Medicare risk contract HMOs may attract an older mix of commercial enrollees than do HMOs with only commercial enrollees or with a Medicare non-risk contract. Fig. 2 indicates that there is substantial variation in hospitalization utilization, and thus expected annual costs, even within the under-65-year-old HMO enrollee population. Therefore, variation in average age of the commercial enrollee population might explain a good deal of the variation in observed commercial enrollee marginal cost across HMO categories.

Fig. 4(a) and (b) show the results of a simulation to determine a multiple-output minimum efficient scale (MES) for the HMO industry. MES for a single output firm is defined as the lowest level of output where average cost (AC) is minimized. Determining MES for a multiple output industry is more complex and relies on minimization not of AC but of RAC. RAC is analogous to AC in the single output case, but "measures the total cost per unit of a given composite commodity whose scale varies but whose output composition remains fixed" (Wang Chiang and Friedlander, 1985). RAC can therefore be defined as

$$\frac{TC(tY^\circ)}{t} \qquad (18)$$

where TC is the total cost function, t represents the scale of output (Bailey and Friedlander, 1982). For Fig. 4(a) and (b) RAC was calculated as

$$\frac{\hat{C}}{\sum_{i=1}^{m} Y_i} \qquad (19)$$

where $\hat{C}$ is the total fitted cost for a given level of composite output and Y_i is the volume of each component of the total composite output, $i = 1,\ldots,m$.

Fig. 4(a) and (b) present the results of the simulation of RAC holding all variables except output volumes constant at their mean values. Output mix is held constant at the proportional mix represented by the average HMO with 83% commercial, 12% Medicare, and 5% Medi-Cal enrollees. RAC is estimated both for the full study sample and for a truncated sample that excluded 11 observations for the two largest Medicare risk HMOs. The results based on the truncated sample should eliminate most of the effects of the apparent diseconomies of scope, which can be mistaken for diseconomies of scale in an analysis of RAC.[12] The results presented in Fig. 4(a) indicate an MES of 150,000 enrollees for the full sample and an MES of 850,000 (i.e. continuously decreasing RAC, since 850,000 enrollees is the maximum study sample scale) for the truncated sample. Both curves are essentially flat beyond 100,000 enrollees. Inspection of the 95% confidence intervals of the RAC for both samples presented in Fig. 4(b) shows that the results of the two samples cannot be distinguished at higher and lower total output levels (the shaded area shows where the two confidence intervals overlap). These results are consistent with the earlier finding that the average HMO with about 115,000 enrollees is operating in a region of constant returns to scale.

5. Conclusions and possible policy implications

Do HMO production characteristics (i.e. evidence of returns to scale and scope) explain the recent trend in increasing HMO size and enrollee market scope? The findings suggest that returns to scale in this industry are effectively exhausted by the time an HMO reaches a size of about 115,000 enrollees. Increasing returns to scale, therefore, clearly may be an important rationale for mergers and acquisitions of HMOs below this size. The findings presented in the previous section do not, however, seem to support the existence of increasing returns to scale as a primary reason for consolidation in the high scale end of the HMO industry. Yet, mergers of large (greater than 100,000 enrollees) and very large (greater than 250,000) HMOs are becoming more commonplace.[13] How can this activity be explained?

There are at least two explanations. The first is that the MES is in reality much larger than this estimate and therefore the mergers of larger HMOs can substantially reduce long-run average cost. Clearly the width of the 95% confidence intervals in Fig. 4(b) does not allow us to rule out the possibility of continuously declining RAC curves for both samples of HMOs.[14] Large HMOs can have an

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[12] See Wang Chiang and Friedlander (1985).

[13] See Lee (1993), Gomez and Olmos (1994), Anders and Winslow (1995), Freudenheim (1995b), Kertesz and Moore (1995), Los Angeles Times (1995), Olmos (1995a) Olmos (1995b).

[14] However, as translog parameter estimates diverge from mean values, uncertainty increases dramatically (Vita, 1990). Therefore, it will always be difficult to determine the true nature of RAC for very large HMOs.

advantage in dealing with suppliers of factor inputs, particularly in the negotiation of discounts in return for guaranteeing a high level of utilization (Anders, 1995c). Semi-monopsonistic relations with suppliers may help very large HMOs reduce their own costs, but may also have negative welfare consequences. There is some evidence that hospitals and other suppliers of goods and services have been able to cover the costs of HMO discounts by increasing prices to non-HMO purchasers (Freudenheim, 1994; Hilzenrath, 1994).

Another explanation for continuing mergers of large HMOs accepts the finding that MES for the HMO industry is 115,000 enrollees with constant returns to scale thereafter. It suggests, however, that increasing HMO size beyond MES, especially when combined with the expansion of provider network size and geographic breadth of HMO operations, increases HMO quality as viewed from the perspective of a large purchaser, such as the California Public Employee Retirement System and large corporations with geographically dispersed operations/employees (Kenkel, 1991b). [15] Not only do large purchasers prefer to deal with larger HMOs, they have begun to restrict employee/enrollee choice by contracting with only a very select few large HMOs (Berkman, 1990; Modern Healthcare, 1990; Barnum, 1993; Sardinha, 1993a). The perception that larger HMOs are of higher quality provides a rationale for HMO mergers at higher than MES level. And, in particular, the increasing tendency for large purchasers to restrict employee access to the very largest HMOs makes it imperative for HMOs to grow quickly or risk being excluded permanently from the large group commercial enrollee market. Therefore, even in the absence of economies of scale beyond 115,000 enrollees, a purchaser perception of improved quality may explain increasing average HMO size and mergers of larger HMOs.

But increasing consolidation of HMOs, either within or across geographic markets, raises concerns. First, although large purchasers prefer larger to smaller HMOs, there is some evidence that the actual HMO enrollees may prefer the style of service delivery of smaller HMOs (Olmos, 1994d). The Pacific Business Group on Health, an employer and health insurance purchasing coalition of 20 large California employers, has found that employees enrolled in some smaller HMOs have expressed a greater satisfaction with care received. Larger size, thus, does not immediately appear to translate into higher quality for the direct consumers of health care services. Second, although purchasers are now implicitly encouraging HMO mergers by their restrictive contracting practices, continued consolidation among HMOs may ultimately result in such highly concentrated local markets for HMO services that competition is seriously threatened (Katz and Shapiro, 1994). [16]

[15] There is evidence of "demand-side" economies of scale in other industries such as transportation (Harris and Winston, 1983; Keeler, 1989; Feder, 1994).

[16] Reaction against what was seen as excessive consolidation of HMOs has already occurred in Minnesota, where a statute was passed in 1994 severely restricting HMO mergers within the state (Minn. Stat. § 62J.47 [1994]).

Although this study provides evidence of economies of scale for HMOs, it does not produce findings of economies of scope, where output scope is defined by an enrollee type market. Indeed, the results indicate the presence of diseconomies of scope, in general and in particular with the joint production of commercial and Medicare risk contract enrollees. These diseconomies of scope may be more apparent than real if the higher costs of joint production are related to unmeasured differences in output quality (e.g. older enrollee mix) in an HMO that has both types of enrollees.

In the absence of economies of scope, how are we to explain recent increased HMO output diversification, i.e. increased HMO participation in public enrollee programs/markets? Increasing interest in public sector enrollees may be caused by relatively recent changes in the nature of HMOs and their environment. Growth is important for the individual HMO if it is to maintain contracts with large purchasing groups. Moreover, as the majority of HMOs are now for-profit, investor-owned organizations, continued growth is also important for maintaining stock value/price and thus reducing the cost of capital. As the market for commercial enrollees has become more competitive in recent years, HMOs may be increasingly turning to public enrollee markets to sustain their rates of growth (Kenkel, 1994). In addition, increased enrollment of public market enrollees may also be related to rising demand for Medicare and Medicaid capitated coverage as well as the promise of higher rates of return (relative to the commercial enrollee market) for HMOs that specialize in care of either category of public enrollees.

While the federal government has been trying to encourage Medicare HMO enrollment, demand for capitated Medicare coverage has been stimulated, in part, by large employers' needs to reduce overall health benefit expenditures, specifically those responsibilities for the future cost of retiree benefits (Belch, 1992). Requiring enrollment in an HMO usually reduces the expected retiree premiums substantially, and thus provides a possible reason for increasing demand for Medicare risk coverage. Increased enrollment of Medicare risk beneficiaries may also be related to the awareness by HMOs that higher profit margins can be expected with this type of enrollee. Medicare risk HMOs are required to use all profits/surpluses from the enrollment of Medicare risk enrollees either to reduce premiums and copayments or to enrich the enrollees' benefit packages, all of which can be expected to increase Medicare enrollment. The high concentration of Medicare risk enrollees in a few very large HMOs located in areas with high Medicare payment rates supports this explanation (Brown et al., 1993; Feldman et al., 1993).

Demand for Medicaid capitated coverage has increased dramatically since the late 1980s. Concerns about the rapidly rising costs of the Medicaid program have resulted in recent federal and state initiatives promoting HMO enrollment of Medicaid recipients (Anders, 1993; Sardinha, 1993b). Some states, such as California, now require that most aid for families with dependent children (AFDC) Medi-Cal recipients enroll in HMOs. And, as with the Medicare program, there

are indications that an HMO specializing in Medicaid enrollees can make a higher rate of return on Medicaid enrollees, at the margin, than it can on commercial enrollees (Given, 1994).

Although this study uses the most recent data available on HMOs, it is important to recognize that reliance on even the "best" data may be somewhat problematic for the purposes of policy analysis in an industry undergoing the degree of transformation now observed in health care. Two related trends that have become obvious, especially after 1992, are the consolidation of market participants other than HMOs (e.g. input suppliers and purchasers of HMO services) and the increasingly (price) competitive nature of managed care (Olmos, 1994a, Olmos, 1994c, Olmos, 1994e). Just as the results of earlier HMO studies may no longer be relevant for today, ongoing change may limit the generalizability of the results presented in this paper. Thus, as new data become available, it will be of critical importance to update this analysis to determine if evolution of market and environmental conditions alter the nature of HMO cost and production characteristics.
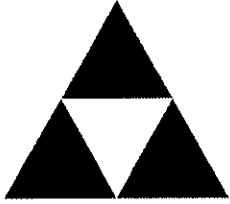
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TECHNICAL REPORT

FEDERAL HEALTH CARE REFORM 2009: START-UP CAPITAL COSTS FOR HEALTH CARE CO-OPS AND A PUBLIC PLAN

Prepared by a joint work group of the
American Academy of Actuaries and the
Society of Actuaries

October 30, 2009

FURTHER INFORMATION

This report was prepared by a joint work group of the Society of Actuaries' Health Section Council and the American Academy of Actuaries' Health Practice Council. The joint work group was created to provide detailed analysis of the capital requirements that would be required for either a public plan option or series of health insurance cooperatives, which are both being discussed as part of ongoing health care reform efforts.

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If you have any questions or would like additional information on any of the modeling and analysis contained in this technical report, or if you would like to have projections of capital requirements for scenarios other than those covered by this report, please contact either Heather Jerbi, the Academy's senior health policy analyst, at 202.785.7869, Jerbi@actuary.org; or Sara Teppema, the SOA's staff fellow for health at 847.706.3511, steppema@soa.org.

The American Academy of Actuaries is a 16,000-member professional association whose mission is to serve the public on behalf of the U.S. actuarial profession. The Academy assists public policymakers on all levels by providing leadership, objective expertise, and actuarial advice on risk and financial security issues. The Academy also sets qualification, practice, and professionalism standards for actuaries in the United States.

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EXECUTIVE SUMMARY

The American Academy of Actuaries and the Society of Actuaries established a joint work group to evaluate the start-up capital requirements for health care cooperatives (co-ops) and for a government-owned and operated insurance program (public plan) that would compete with existing health insurance plans. Proposals to include co-ops and/or a public plan are included in health care reform legislation currently under congressional consideration. The work group developed a model that projects amounts of start-up capital required over a 10-year period under various scenarios (the projection model).

Start-up capital includes the pre-operational capital required to establish a co-op or public plan and the risk capital that a plan must maintain to support its financial obligations to its members. The work group's analysis reflects co-op/public plan activities during the first 10 years of development and operation with a focus on start-up capital requirements, and as such, does not include the impact of different reform provisions regarding subsidies, pricing requirements, or numerous other provisions that are included in the health care reform proposals under consideration.

The projection model produces estimates of capital requirements for health care co-ops and public plans that compete with private-sector health plans on a level playing field. A level playing field means that health care co-ops or a public plan would operate according to the same rules that apply to private-sector plans and would need to perform most or all of the same functions that private-sector plans perform. Specifically, it means that both private-sector health plans and health care co-ops or a public plan would be subject to the same rules regarding underwriting, rating restrictions, regulatory reporting, consumer protections, solvency requirements, and other regulatory oversight.

One of the most critical assumptions with respect to a level playing field is the financial relationship co-ops or a public plan would have with health care providers. While legislation has been considered that would establish a public plan with provider rate-setting authority (e.g., provider fees could be set at 105 percent of the Medicare fee schedule), legislation currently under consideration would require a government-sponsored entity negotiate with providers as private health insurance organizations do. A government-sponsored plan (whether a co-op or a public plan) with regulatory rate-setting authority cannot be assumed to be competing on a level playing field with private organizations. Accordingly, it was assumed, for the purposes of this study, that health care co-ops or a public plan would negotiate reimbursement rates with health care providers.

A significant exception to the level playing field assumption is access to capital. It was assumed that health care co-ops and a public plan would receive initial start-up capital infusions from the federal government and continue to receive federal grants when premiums and investment income are insufficient to produce the capital needed for ongoing operations. This is a significant benefit not available to the private sector.

Risk-capital requirements were projected under state solvency standards for statewide health care co-ops (one for each state) and for a national public plan with regional operations. The following scenarios were modeled:

- Low initial enrollment (2 million people enrolled nationwide in the first year of operation) that remains level versus high initial enrollment (20 million people enrolled nationwide in the first year of operation) that continues to grow.

- Accurate pricing (generating assumed 3 percent contribution to surplus) versus pricing that generates an initial loss of 5 percent (underpricing) and pricing that generates an initial contribution to surplus of 5 percent (overpricing).

In all scenarios, health care co-ops and a public plan are assumed to maintain prudent amounts of risk capital, defined as 250 percent of the amount of the minimum capital (termed the company action level) promulgated by the National Association of Insurance Commissioners (NAIC).

Risk sharing mechanisms, such as risk adjustors, reinsurance or risk corridors, may affect capital requirements; however, we believe the overall impact is immaterial. Cash inflows in one year may be offset by cash outflows in another. In addition, it is reasonable to interpret any risk-sharing payments from the federal government, as opposed to those from other insurers, as merely another type of capital infusion from the government. Therefore, we excluded all potential risk-sharing mechanisms from our analysis.

Note that while this report contains some qualitative comments with respect to the requirements for a successful health care co-op or public plan, no position is taken regarding the likelihood either would be successful. From a financial perspective, a successful health care co-op or public plan might be defined as one that achieves sufficient enrollment and pricing to be financially self-sustaining while maintaining adequate capital.

The following tables summarize the start-up capital infusions needed for health care co-ops (Table 1A) and a public plan (Table 1B) during the first 10 years of development and operation under the various projection scenarios:

Table 1A Capital Required To Be Infused from Outside Sources During First 10 Years HEALTH CARE CO-OPS ($ In Billions)						
	Low Enrollment (Nationwide enrollment of 2 million people (constant from 2013-2019))			High Enrollment (Nationwide enrollment of 20 million (2013) growing to 40 million (2019))		
	Pre-Operational Capital[a]	Risk Capital[b]	Total Capital	Pre-Operational Capital[a]	Risk Capital[b]	Total Capital
Accurate Pricing	$0.8	$1.6	$2.4	$0.8	$15.6	$16.4
Underpricing	$0.8	$3.6	$4.4	$0.8	$44.8	$45.6
Overpricing	$0.8	$1.3	$2.1	$0.8	$12.8	$13.6

[a]Pre-operational capital infusions are assumed to be interest-free loans from the federal government; pre-operational capital amounts are shown prior to any potential loan repayments.
[b]Risk capital infusions are assumed to be grants from the federal government.

Table 1B Capital Required To Be Infused from Outside Sources During First 10 Years PUBLIC PLAN ($ In Billions)						
	Low Enrollment (Nationwide enrollment of 2 million people (constant from 2013-2019))			High Enrollment (Nationwide enrollment of 20 million (2013) growing to 40 million (2019))		
	Pre-Operational Capital[a]	Risk Capital[b]	Total Capital	Pre-Operational Capital[a]	Risk Capital[b]	Total Capital
Accurate Pricing	$0.5	$1.4	$1.9	$0.5	$14.4	$14.9
Underpricing	$0.5	$3.3	$3.8	$0.5	$41.0	$41.5
Overpricing	$0.5	$1.2	$1.7	$0.5	$11.9	$12.4

[a]Pre-operational capital infusions are assumed to be interest-free loans from the federal government; pre-operational capital amounts are shown prior to any potential loan repayments.
[b]Risk capital infusions are assumed to be grants from the federal government.

Major Conclusions:

(1) Capital requirements are most sensitive to the number of co-op/public plan members enrolled and any differences between pricing assumptions and actual claims and expenses experienced. Although not shown in the tables, capital requirements are also sensitive to the health care costs per member.

(2) Substantial capital is required to fund health care co-ops or a public plan over the first 10 years of development and operations. Under the limited scenarios modeled, start-up capital requirements ranged from approximately $1.7 billion to $45.6 billion.

(3) Start-up capital is required to cover pre-operational start-up expenses and to meet prudent risk capital standards until co-ops or a public plan generate needed capital growth from operational earnings. Most of the start-up capital required in the scenarios tested is to meet prudent risk capital solvency standards. In the underpricing scenarios, capital infusions are needed in higher amounts and over a longer duration due to operating losses experienced.

(4) NAIC solvency standards for health insurance organizations are based mainly on health care claims. Therefore, risk capital requirements increase with membership and with member health care costs. As membership grows, risk capital requirements grow. Even if membership remains level, risk capital requirements grow due to the effect of medical trend on health care costs.

(5) Start-up capital requirements for a national public plan operating on a level playing field with private sector plans are likely to be similar to those for all health care co-ops in total with any differences related mainly to assumed administrative efficiencies and slightly lower provider reimbursement rates for the public plan.

In an effort to serve as an ongoing resource to policymakers and the public, the work group will consider, as appropriate, requests to run additional iterations and scenarios of the projection model.

CAVEATS

Projection models are inherently complex, and future results will almost certainly differ from the modeled assumptions, often materially. This is especially true for a model that attempts to reflect legislation that is currently being debated and revised. The work group cautions readers to be cognizant of the financial uncertainties that surround new and untested insurance entities such as those discussed in this report.

It is extremely difficult to develop premium rates in advance for an organization with no cost history and with unknowns such as:

(a) The number of enrollees and actual risk characteristics of the population that will ultimately be attracted by health care co-ops or a public plan;

(b) The regulatory provisions with which health care co-ops or a public plan must comply, including standardized levels of benefits, underwriting restrictions, and rating limitations;

(c) The action taken by private-sector health insurers in response to health care co-ops or a public plan and the insurance exchanges.

Accordingly, the work group developed and summarized a limited number of scenarios which it considered to provide a reasonable range of possible outcomes. Readers of this report are cautioned against accepting any one scenario as the most likely outcome. Also, note that as specific details replace the modeled assumptions, actual results may fall outside the range of outcomes presented in this report.

As is further outlined in Exhibit D of this report, the work group relied on its understanding of bills under consideration during the development of this report and the work of those noted with respect to health care reform legislation.

INTRODUCTION

A. Background

The Senate Health, Education, Labor and Pensions Committee's *Affordable Health Choices Act* and the House of Representatives' *Affordable Health Care for America Act* would both establish a public insurance program owned and operated by the government that would compete with existing health insurance organizations. Under these proposals, the public plan would adhere to the same requirements as private-sector plans, including benefit levels, provider networks, issue and rating rules, solvency standards, and cost-sharing. These pieces of legislation vary on the issue of provider payment rates, either requiring the public plan to negotiate rates with providers or establishing the public plan at some percentage of Medicare rates.

The Senate Finance Committee's *America's Healthy Future Act of 2009* would authorize loans and grants to establish the Consumer Operated and Oriented Plan (co-op) program, which would create non-profit member-run health insurance companies that serve individuals in one or more states. Such member-run health insurance companies would compete with and be subject to the same requirements as existing health insurance organizations, but would be exempt from federal income tax. The co-op program has been suggested as an alternative to the public plan.

The American Academy of Actuaries' Health Practice Council and the Society of Actuaries developed a model to project the capital requirements of health care co-ops and a public plan under a variety of potential scenarios. This report describes the model, the key drivers of capital requirements, and the amounts of capital required to support health care co-ops or a public plan until they become self-sustaining under those scenarios.

B. Purpose

This report is intended to be used by members of Congress, their staffs, and the public as part of ongoing deliberations regarding the various health care reform proposals under consideration.

C. Scope

The results from our projection model that are presented in this report include the start-up risk capital and the start-up operating capital required to support network-based health care co-ops and a public plan. A health care co-op or public plan that contracts with health care provider systems to deliver care to its members is considered network-based.

Risk capital is needed at start-up and on an ongoing basis to mitigate the risk that insurance claims and expenses will exceed insurance premium revenues, jeopardizing financial solvency. In other words, risk capital reduces the probability that an insurance organization will not have enough funds to meet its financial obligations. Based on historical experience analyzed by actuaries, the NAIC developed minimum capital standards that vary based upon the amount and types of risks assumed by an insurance organization. These standards, called risk-based capital (RBC) standards, are the basis for the risk capital requirements produced by our model.

Operating capital is needed to cover start-up expenses before the entity's premium and investment income revenues meet or exceed all of its benefit costs and functional expenses. Operating capital must also be maintained on an ongoing basis to cover operational costs during other periods when the entity's revenues do not cover all of its benefit costs and functional expenses. Exhibit B lists the operational functions that should be performed by health care co-ops or a public plan.

This report does not address the following:

- Capital requirements of health insurance exchanges or purchasing organizations that do not bear insurance risks;

- Capital requirements of public programs such as Medicare or Medicaid that do not compete with private insurance organizations;

- Subsidies to small employers or to people with low incomes;

- The effects of health reform initiatives, including the creation of co-ops or a public plan, on future health care costs;

- The effects of new benefit requirements that may increase or decrease insurance costs;

- The degree of effectiveness of any risk adjustment mechanisms that may be included in health care reform legislation;

- Additional costs to individuals, groups, or insurance companies attributable to a surcharge on policies referred to as Cadillac benefit plans;

- The effects of health care co-ops or a public plan on the enrollment in or margins generated by private-sector plans, and the consequent effects on local, state, and federal tax revenues; and

- The effect of the private-sector's response to the inclusion of health care co-ops or a public plan.

D.   Level Playing Field

The projection model results presented in this report are based upon an assumption that health care co-ops and a public plan would compete with private sector plans on a level playing field. A level playing field means that health care co-ops or a public plan would operate according to the same rules that apply to private-sector health insurance plans and would need to perform most or all of the same functions that private-sector plans perform. Specifically, a level playing field means that both private-sector health plans and health care co-ops or a public plan would be subject to the same rules regarding:

- Acceptance of all applicants (guaranteed issue);
- Preexisting condition exclusion restrictions;
- Benefit/coverage mandates;
- Pricing parameters, including minimum loss ratio requirements, if any, and rate variation restrictions;
- State and local taxes, licenses, and fees;
- State guarantee fund assessments;
- Risk adjustment and other risk-sharing mechanisms;
- Marketing, including participation in health insurance exchanges;
- Data gathering and reporting;
- Consumer protection and grievance programs;
- Competition to provide health benefits to employees of local, state, and federal government agencies;
- Minimum risk capital and other aspects of financial solvency;
- Regulatory oversight;
- Negotiated reimbursement rates with health care providers.

We did make one significant assumption departure from the level playing field concept, which is that federal grants are available to fund required capital at any time during the 10-year projection period.

METHODOLOGY AND ASSUMPTIONS

Various health care reform bills have been proposed, amended, and continue to be debated by the U.S. Congress. Due to this fluid environment, the projection model accommodates a wide array of assumptions that allows it to be adapted to changing circumstances.

This section of the report describes the general methodology and assumptions included in the projection model. The work group modeled the following types of health care co-ops and public plan:

(i)　Network–based health care co-ops organized and operating on a statewide basis,

(ii)　A national public plan with regional operations.[1]

A.　Methodology

The following steps outline the methodology employed in the development of start-up capital for the health care co-ops and a public plan:

(1) **Define populations by broad risk categories.** Potential enrollment populations of health care co-ops and a public plan were defined by broad risk category, based on current insurance status and health status (standard risks versus substandard risks). In addition it was assumed that people eligible for Medicaid could enroll in plans offered through the health insurance exchanges (private sector, health care co-op or public plan offerings)

Under an accurate pricing scenario, the model assumes premiums received are consistent with the underlying risk characteristics of the enrolled population. However, selection (either positive or adverse) experienced by a health care co-op or public plan may impact capital requirements. This selection might not be fully mitigated by risk-sharing mechanisms. Overall selection may arise from the expanded individual and small group market and specific plans may attract a disproportionate share of healthy or unhealthy people. The projection model accommodates selection potential. The modeled overpricing and underpricing scenarios reflect favorable and unfavorable selection (respectively) via assumptions described below as *Deviations from the Target Medical Loss Ratio.* With that said, the underpricing scenario could underestimate the impact if adverse selection is severe and not mitigated through risk-sharing mechanisms.

(2) **Define start-up capital requirements.** The projection model was developed to quantify the following with respect to the start-up capital requirements for a health care co-op or public plan:

(a) *Risk-based capital.* Risk-based capital reflects NAIC regulatory requirements designed to protect insurer solvency. Risk capital is the capital required to mitigate the insolvency risk associated with insurance claims and expenses exceeding insurance income. (see Exhibit A for more detailed definitions). To avoid regulatory sanctions, private-sector health insurance organizations target their capital levels well above the minimum defined by the NAIC RBC formula. The projection model uses a scaled-down version of the formula to estimate this minimum (called the company action level) for a health care co-op or public plan. All scenarios incorporate a 250 percent multiple of the company action level to define the prudent level of risk capital required at any point in time.

(b) *Operating capital.* Operating expenses are defined as marketing, provider and medical management, account and member administration, and corporate services. See Exhibit B for more detail on the operational functions performed by health plans.

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[1] Regions for the public plan are assumed to be the same geographic regions as those used to vary Medicare physician payment rates.

(c) *Pre-operational start-up expenses* (see Exhibit A for more detail). In addition to the above risk and ongoing operating capital needs, an amount of money would be required to develop a health care co-op or public plan. Staff must be hired, regulatory approvals obtained, and provider contracts negotiated. In addition, complex information systems needed for such items as paying claims, billing and collecting premiums, accounting and financial reporting, and actuarial or other analyses, must be developed, purchased, or leased. Preoperational start-up expenses can be minimized by leasing or outsourcing much of the required systems and other administrative infrastructure initially. The model assumed that approach for all scenarios.

The amount of start-up expenses must be evaluated with respect to both the actual expenditures and the length of time until premiums begin to cover such expenditures. That is, the funding of a new organization must anticipate a substantial lag between the time start-up expenditures are made and the first member is enrolled (i.e., when premiums are first available to cover costs).

The primary drivers for start-up capital requirements are the number of people enrolled in a health care co-op or public plan, the health care costs per member, and the financial experience of the health care co-op or public plan (i.e., the extent to which premiums exceed or fall short of total medical costs and administrative expenses).

(3) **Develop and summarize financial projections and scenarios**. After defining the population and capital requirement methodologies, the projection model produces annual financial results, including pro forma financial statements, for the 10-year projection period (i.e., years 2010 through 2019) based on a detailed set of assumptions. We defined each set of assumptions and the corresponding financial results as a scenario.

B.   Assumptions

The projection model was developed to accommodate varying input assumptions. Across all the various scenarios, some assumptions remained constant while we varied others for sensitivity analysis. Model algorithms were then applied, using these assumptions, to develop required capital estimates for each scenario. Note that all of the assumptions can be adjusted for new scenarios.

(1)   **Assumptions held constant.** The key model assumptions that were held constant across all scenarios in this report are as follows:

(a) The populations by broad risk category as described above (see *Methodology* (1)).

(b) A prudent level of capital is 250 percent of the company action level of the NAIC risk-based capital formula. This assumption was derived as the low end of the range of actual risk-based capital targets for a large national commercial managed care organization, a large regional managed-care organization, and risk-based capital studies prepared on behalf of the Blue Cross Blue Shield system. Although this assumption has been used for modeling purposes, note that a prudent level of capital for a particular organization should reflect the circumstances of that organization.

(c) Preoperational start-up expenses for each statewide health care co-op are estimated to be $15 million (total of $750 million nationwide) and incurred evenly over 2011 and 2012. While empirical support for this assumption is not available, it should be noted that the impact of pre-operational expenses is overwhelmed by the impact of risk capital requirements. Preoperational start-up expenses for a public plan are estimated to be $500 million and incurred evenly over 2011 and 2012, reflecting an assumed economy of scale with respect to the 50 co-ops.

(d) Starting health care claims costs per member assumptions (i.e., calendar year 2010) were based on 2009 claims cost derived from a May 2009 report by Milliman USA, *2009 Milliman*

Medical Index, an undated report prepared by Leif Associates Inc., *Report: The Business Case for Coverage of Tobacco Cessation*, and U.S. Census Bureau information.

    (i)   Aggregate average per member per month claims costs for the co-ops = $420.00

    (ii)   Due to the negotiating power of the federal government with health care providers, it was assumed that the public plan would experience claims costs, and therefore premiums, that are 5 percent lower than for the co-ops.

(e) Enrollee cost sharing is 27 percent.

For the proportion of medical costs paid by enrollees in the form of deductibles, coinsurances, and copayments, a benefit plan that pays 73 percent of all medical costs with the member paying the remaining 27 percent was assumed. The model did not incorporate multiple benefit plan options that will likely characterize any actual reform bill. This could be an enhancement to the model to accommodate future requests.

(f) Functional expense factor assumptions for co-ops beginning in 2013 are:

Functional Description	Assumption (per member/per month)
Marketing/Sales	$19.13 PMPM
Provider & Medical Management	$3.40 PMPM
Account & Member Administration	$13.57 PMPM
Corporate Services	$5.65 PMPM

The assumed ongoing functional expenses required of a health plan are consistent with assumptions published by the Sherlock Company in July 2008 and a policy statement of the American Academy of Actuaries released in September 2009.[2] See Exhibit B for more detail on the functional operations of health plans.

In 2013, these functional expenses amount to approximately 8.6 percent of premium. Sales commission expenses are assumed to increase at the same rate as premiums. Other PMPM functional expenses, (other than sales commission costs) increase at an inflation rate of 3 percent per year. It was assumed that a public plan could achieve some economies of scale with functional expenses of about 7.2 percent versus the 8.6 percent for the co-ops.

(g) State premium taxes are 2 percent of premiums and state/federal guaranty funds and other assessments are 1.5 percent of premiums

(h) Risk charges (see Exhibit A) are set at an industry average of 3 percent to fund a risk margin for potential losses and/or contributions to required capital.

(i) Federal funds are distributed as loans or grants. Loans are provided to cover pre-operational start-up expenses, and grants are provided to meet state solvency requirements.

(j) Medical trend, which reflects the increase in costs for covered medical expenses, is 9 percent per year.[3] See Exhibit A for a more detailed definition of health care trend generally.

(k) The target medical loss ratios (see Exhibit A) for the co-ops vary by year and range from an initial ratio of 84.9 percent in 2013 to 86.5 percent in 2019 reflecting the assumption that

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[2] American Academy of Actuaries, *Critical Issues in Health Reform: Administrative Expenses*, September 2009. http://www.actuary.org/pdf/health/admin_expenses_sept09.pdf

[3] With respect to this 9 percent medical trend assumption, we reference the *Spring 2009 Health Care Trend Survey* conducted by Aon Consulting. Virtually all of the major national managed care organizations participated in this survey (e.g. Aetna, CIGNA, Humana, Kaiser, UnitedHealth care, and 26 Blue Cross Blue Plans). The national medical trend average for these managed care organizations was slightly in excess of 10 percent. Each of our modeled scenarios assumes a flat 9 percent annual medical trend for the period from 2010 through 2019. This is slightly lower than the survey results and consistent with our taking no position as to whether health care reform will have either a positive or negative impact on medical cost increases.

medical trends would continue to exceed the rate at which administrative expenses increase throughout the projection period. The target medical loss ratios for the public plan ranged from 86.3 percent in 2013 to 87.7 percent in 2019.

(l) Each health care co-op was assumed to cover 2 percent of the total enrollment in all co-ops nationally (a rough approximation of the average size of 50 state-based co-ops). We recognize that this is a simplification and are prepared to conduct more detailed state-specific analyses as requested.

(m) The short-term cash equivalent investment rate starts at 0.5 percent and grades to 1.5 percent by 2012.

The grading reflects the unusually low current interest rate environment that we expect will increase over the next several years.

(n) The longer-term investment rate (bond rate) starts at 3 percent and grades to 5 percent by 2012.

The grading reflects the unusually low current interest rate environment that we expect will increase over the next several years.

(o) The loans from the U.S. Treasury are interest-free, absent any defined interest rate in the draft bill language.

(p) We assumed that funds held for claims incurred but not yet paid would amount to 17 percent of each year's incurred claims. This is approximately two months of paid claims, which is consistent with current industry experience. These funds are available for investing at the short-term cash-equivalent rate.

(q) The health care co-ops and public plans are exempt from federal income taxes. Note however that the model has the capacity to analyze other assumptions regarding federal income tax treatment.

(r) The health care co-ops or a public plan would start operations on January 1, 2013.

(2) **Assumptions varying by scenario.** Capital requirements were projected for health care co-ops and a public plan under 12 scenarios with varying assumptions in addition to the constant assumptions described above. Each scenario is defined by a combination of assumptions for enrolled members and actual claims experience, as represented by deviation from a targeted medical loss ratio:

(a) *Level of initial enrollment in 2013:*

    (i) High enrollment (20 million members nationwide with growth to 40 million in 2019).

    (ii) Low enrollment (2 million members nationwide in 2013). Enrollment was maintained at 2.0 million members from 2013 through 2019. This was a simplifying assumption to display the capital requirements assuming the health care co-op or public plan offerings do not gain substantial traction in the market place.

(b) *Deviations from the target medical loss ratio:*

    (i) No deviation from the target medical loss ratio in any year (accurate pricing scenario).

    (ii) 5 percent underpricing in the first year. This reflects claims 8 percent higher than the target loss ratio for year 2013—5 percent higher than expected claims plus the 3 percent assumed contribution to surplus. We assume the under pricing decreases gradually to 3 percent in 2014 and 1 percent in 2015. Thereafter target loss ratios are achieved.

    (iii) 5 percent overpricing in the first year. This reflects claims 2 percent higher than the target loss ratio for year 2013—5 percent lower than expected claims plus the 3 percent assumed contribution to surplus. We assume the over pricing decreases to 4 percent in 2014 and by 2015 target loss ratios are achieved.

(3)   Qualifications of the results

As previously noted, financial-projection models are inherently complex and future results will almost certainly differ from the modeled assumptions, often materially. This is especially true for a model that is attempting to reflect legislation that is currently being debated and revised.

Additionally, readers of this report are cautioned to be cognizant of the financial uncertainties that surround new and untested insurance entities such as the health care co-ops and public plans discussed herein.

It is extremely difficult to develop premium rates in advance for an organization with no experience base and with unknowns with respect to such critical parameters as:

(a)   The number of enrollees and risk characteristics of the population that will ultimately be attracted by the health care co-ops and public plans;

(b)   The regulatory provisions with which the health care co-ops and public plans must comply;

(c)   The responses by the private-sector health insurers to the health care co-ops, public plans, and the insurance exchanges.

Accordingly, we developed and summarized a limited number of scenarios which we consider to provide a reasonable bound on the range of possible outcomes. Readers of this report are again cautioned against accepting any one scenario as the most likely outcome. As specific details replace the currently modeled assumptions, actual results may fall outside the range of outcomes presented in this report.

STARTING HEALTH CARE CO-OPS

A. Network-Based Health Care Co-ops

For purposes of this report, a network-based health care co-op is defined to be a member-run and member-owned health insurance company that usually pays for its members' health care claims on a fee-for-service basis with the fees being contractual, such as a per diem, a set amount per service, or a percentage discount off of the providers' billed charges. The health care co-op may also employ capitated provider payment arrangements; however, this is less common relative to fee-for-service. The health care co-op may build its network by negotiating and contracting with provider groups directly, which can take many years to implement. It may also lease existing networks.

B. Start-Up Steps

To start a co-op, a group of individuals must come together and legally form the co-op. Because a co-op is member-run, the group must decide on the leadership and bylaws of the co-op.

To transact the business of insurance, the co-op must apply for an insurance license and a certificate of authority in each state that it expects to sell policies. To obtain the license, the co-op must meet each state's minimum capital requirements, elect officers and a board of directors, and file articles of incorporation.

Once the proper licensing is obtained, the health care co-op would need to build the infrastructure to operate a health insurance company. In addition to senior management, the co-op needs the capacity to perform the functions listed in Exhibit B. The co-op would require information technology systems to support those functions.

Many of the insurance administrative functions can be outsourced initially. As the co-op builds membership, it can develop the necessary resources in-house. In particular, the co-op also can lease a health care provider network initially rather than negotiating the necessary contracts itself. However, the network access/rental fee paid by the co-op would need to be included in the premium rates.

Before the co-op can begin to sell policies, it would need to develop the health insurance products that it wishes to sell. This requires designing the benefits, developing the rating manual, drafting the policy language, and filing both the policy form and rates with the applicable state departments of insurance for approval.

Once the policy forms and rates are approved, the co-op would market and sell the policies, including developing brochures and a call center to explain the policies and to answer any questions of prospective policyholders. If the co-op wishes to contract with insurance agents or brokers to sell its products, it would appoint them and then must notify the appropriate state departments of insurance. To sell its products through a state-based health insurance exchange, the co-op would have to comply with the application and other requirements established for the exchange.

The estimated amounts of capital required to start a health care co-op are shown in Exhibit C.

STARTING A PUBLIC PLAN

A.   Public Plan

A public plan is an insurance program owned and run by government. A public plan could take many forms. The form of public plan modeled by the work group is an insurance program owned and operated by the federal government, administered on a regional basis, and charging prices that vary by region.

B.   Start-Up Steps

If it is intended that the public plan compete with private-sector health plans on a level playing field, the public plan would have to take many of the same steps as would be required to start a health care co-op. Specific requirements are detailed below.

To transact the business of insurance, the public plan would have to apply for an insurance license and a certificate of authority in each state that it expects to sell policies. To obtain the license, the public plan would have to meet each state's minimum capital requirements—again, assuming the intent is to compete with private-sector health plans on a level playing field.

Once the proper licensing is obtained, the public plan would need to build the necessary infrastructure. It is possible that some of the infrastructure could be adapted from the Medicare administrative infrastructure, but this is by no means certain since Medicare is not structured to operate as an insurance company. The public plan would need the capacity to perform the functions listed in Exhibit B, including the information technology systems to support those functions. The provider network for the public plan might be built initially upon the Medicare provider network, thereby reducing the cost of the provider contracting function. However, this would conflict with the level playing field assumption. Many of the insurance administration functions could be outsourced initially. As the public plan builds membership, it could develop the necessary resources in-house.

Before the public plan could begin to sell policies, it would need to develop the products that it wishes to sell. This requires designing the benefits, developing the rating manual, drafting the policy language, and filing for approval both the policy form and rates with the applicable state departments of insurance.

Once the policy forms and rates are approved, the public plan would need to market and sell the policies, including developing brochures and a call center to explain the policies and to answer any questions of prospective policyholders. It is possible that the Medicare beneficiary infrastructure could expand to serve some of these functions. If the public plan decides to contract with insurance agents or brokers to sell its products, it would have to appoint them and notify the appropriate state departments of insurance. To sell its products through state-based health insurance exchanges, the public plan would need to comply with the application and other requirements established for the exchanges.

Note that even if a public plan were exempt from state licensing, in order to operate on a level playing field it would need to establish risk capital at the levels of state requirements. We assume it would also need to develop policy forms, fair rates and a distribution system subject to the same standards required by states.

The estimated amounts of capital required to start a public plan are shown in Exhibit C.

RESULTS, CONCLUSIONS AND NEXT STEPS

A. Results

The following tables summarize the start-up capital infusions needed for health care co-ops (Table 1A) and a public plan (Table 1B) during the first 10 years of development and operations under the various projection scenarios:

Table 1A Capital Required to be Infused from Outside Sources during First 10 Years HEALTH CARE CO-OPS ($ In Billions)						
	Low Enrollment (Nationwide enrollment of 2 million people (constant from 2013-2019))			High Enrollment (Nationwide enrollment of 20 million (2013) growing to 40 million (2019))		
	Pre-Operational Capital[a]	Risk Capital[b]	Total Capital	Pre-Operational Capital[a]	Risk Capital[b]	Total Capital
Accurate Pricing	$0.8	$1.6	$2.4	$0.8	$15.6	$16.4
Under Pricing	$0.8	$3.6	$4.4	$0.8	$44.8	$45.6
Over Pricing	$0.8	$1.3	$2.1	$0.8	$12.8	$13.6

[a]Pre-operational capital infusions are assumed to be interest-free loans from the federal government; pre-operational capital amounts are shown prior to any potential loan repayments.
[b]Risk capital infusions are assumed to be grants from the federal government.

Table 1B Capital Required to be Infused from Outside Sources during First 10 Years PUBLIC PLAN ($ In Billions)						
	Low Enrollment (Nationwide enrollment of 2 million people (constant from 2013-2019))			High Enrollment (Nationwide enrollment of 20 million (2013) growing to 40 million (2019))		
	Pre-Operational Capital[a]	Risk Capital[b]	Total Capital	Pre-Operational Capital[a]	Risk Capital[b]	Total Capital
Accurate Pricing	$0.5	$1.4	$1.9	$0.5	$14.4	$14.9
Under Pricing	$0.5	$3.3	$3.8	$0.5	$41.0	$41.5
Over Pricing	$0.5	$1.2	$1.7	$0.5	$11.9	$12.4

[a]Pre-operational capital infusions are assumed to be interest-free loans from the federal government; pre-operational capital amounts are shown prior to any potential loan repayments.
[b]Risk capital infusions are assumed to be grants from the federal government.

B. Conclusions

(1) Substantial capital will be required to start and support health care co-ops or a public plan for a 10-year period. Under the scenarios presented in this report, which reflect ranges of initial membership and the relationship between actual and expected claim experience, start-up capital requirements ranged from approximately $1.7 billion to $45.6 billion.

(2) The sensitivities of projected capital requirements were tested to a number of variables. The most sensitive are those reflected in the scenarios presented in this report, namely the number of co-op or public plan members, and any differences between pricing assumptions and actual claims and expenses experienced. Other factors that can affect risk-capital requirements include:

(a) Risk characteristics of the people who purchase health insurance from the co-ops/public plan. If enrollees in the co-ops/public plans are healthier than average, average claims, and thus risk capital requirements will be lower. Conversely, if the enrollees are in poorer health than average, claims, and thus capital requirements will be higher. This can occur if adverse selection occurs. Adverse selection can result if health plans are required to accept all applicants with rating restrictions and no coverage exclusions while individuals can continually enter and exit the market without significant consequences. Adverse selection against the co-op or public plan can also occur if these options are perceived to be alternatives to state high-risk pools. Adverse selection can also increase the likelihood that premiums are not priced adequately, which can also increase risk capital needs;

(b) Richness of benefit plans sold by the co-ops/public plan. Richer benefits will increase average claims thus increasing risk capital needs;

(c) Risk margins included in the pricing of the benefit plans. Higher margins will contribute more toward surplus;

(d) Effectiveness of risk adjustment or risk-sharing programs, such as reinsurance or risk corridors, that pertain to the co-ops/public plan and the private-sector health plans with which they compete. Risk sharing mechanisms can reduce risk capital needs for a particular organization by reducing unexpected claims deviations but cannot reduce the overall marketplace cost;

(e) Risk-capital requirements to which the co-ops/public plan are subject; and

(f) Medical trend (rate of increase in underlying health care costs). Higher trends will reflect higher claims, which in turn will require more risk capital.

(3) Start-up capital is required to cover start-up expenses and to meet prudent risk capital standards until the co-ops or public plan can meet their needs for capital from ongoing operations. Most of the start-up capital required would be to meet risk capital standards.

(4) Start-up capital requirements for a public plan that operates on a level playing field with private-sector plans are likely to be similar to those for all the health care co-ops in total.

C.   Next Steps

The work group recognizes that the subject matter of this report is highly technical and it is available to answer questions about this report or about risk-capital requirements for health insurance organizations in general.

Furthermore, this report presents capital requirements projected using assumptions that the work group regarded as reasonable at the time it developed its projections. As more details regarding health care co-ops or a public plan are considered or determined, the work group is prepared to develop new projections that reflect those details and the model was developed to perform such projections quickly. The work group strongly recommends the inclusion of capital requirements be included in Congress' deliberations over health care reform, as well as the production of new projections of required risk capital as various alternatives are considered. Requests for such additional projections may be made by contacting Heather Jerbi (Jerbi@actuary.org), senior health policy analyst at the American Academy of Actuaries, or Sara Teppema (Steppema@soa.org), staff fellow for health at the Society of Actuaries.

EXHIBITS

EXHIBIT A – DEFINITIONS

Administrative expense loss ratio (ALR)—ratio of incurred administrative expenses to earned premium, where typically both expense and premium are measured over a 12-month accounting period.

Adverse selection—the likelihood that individuals with higher risk profiles will purchase more insurance (e.g., richer benefits) than individuals with lower risk profiles. Also refers to situations where consumers know more about their risk profiles than an insurance company and base their decision whether to buy insurance on that information.

Assets—tangible and intangible properties that are owned, typically including cash, bonds, mortgages, real estate, but also receivables and good will.

Capital—the amount by which an organization's assets exceeds its liabilities, also called surplus.

Consumer operated and oriented Plan (co-op) or cooperative—non-profit member-run health insurance companies that serve individuals in one or more states. Such member-run health insurance companies would compete with existing health insurance organizations (e.g., insurance companies, health care service plans, health maintenance organizations, etc.)

Contribution to Surplus – earnings (generally Net Income) that a not for profit organization makes during a defined accounting period.

Cost of capital—expressed as a rate of return, the cost of capital represents the weighted return required by the firm's owners on their stock and by lenders of capital notes. The term is also generally used as a "hurdle rate," (i.e., in a discounted cash-flow analysis, a potential project should provide an expected return above the cost of capital in order for the firm to proceed with it).

Guarantee funds—systems maintained by states that provide a mechanism to protect insurance consumers from insolvency of their insurer. States maintain separate funds for property/casualty and life/health coverages, and may have separate funds for coverage categories within each. Losses covered by the funds are generally paid through assessments against solvent insurers, based on premiums written by the surviving carriers.

Liabilities—most broadly, the insurer's financial obligations under its contracts, as well as any debts outstanding. See also *premium deficiency reserves* below.

Medical loss ratio (MLR)—the ratio of incurred claims to earned premiums, where both are measured for an accounting period, typically for a quarter or a full year.

Medical trend—medical cost inflation rate of the private sector insured population, generally driven by rate of increase in unit prices charged by medical providers, rate of increase in medical utilization by consumers, technology changes (e.g., MRIs replacing or supplementing X-rays), and shifts in service mix (e.g., increase in rate of C-section births).

Member—individual person who is covered by an insurance plan against certain medical costs

NAIC—National Association of Insurance Commissioners. A voluntary organization of all states' insurance commissioners and U.S. territories that meets regularly and develops model laws and regulations in response to emerging regulatory needs. Many states ultimately adopt these model laws and regulations, though sometimes with changes to meet the special needs or situations of a given state.

Net income—revenues (premiums and investment income) less benefit costs, expenses, taxes, and fees. Net income generally also includes asset capital gains and losses in revenue.

Operating capital—capital required to fund start-up plus ongoing operational expenses when premium revenues are not adequate to cover the insurance claims and the operational expenses.

Operating gain/loss—similar to net income but excluding capital gains and losses.

Per member per month (PMPM)—a means for normalizing premiums and medical costs across total enrollment. For example, total premiums for a calendar year are divided by the sum of the number of members in each month of the year (or 12 times the average number of members over the year) to get the premium PMPM amount.

Preoperational start-up expenses—the expenses associated with starting a health insurance organization prior to selling any policies, including organization, licensing, regulatory filings, policy and rate development, building administrative infrastructure and information technology systems.

Premium deficiency reserve—a liability representing the present value of future losses until premiums are expected to cover future claims and expenses.

Premium taxes—taxes assessed by most states against premiums, generally collected irrespective of earnings levels. The typical tax rate on health premiums is 2 percent.

Public plan—a public plan is an insurance program owned and run by government.

Risk-based capital (RBC)—a system for solvency regulation. The NAIC defines a minimum RBC standard that is a function of an insurer's assets, liabilities, premiums and expenses. The formula used to calculate the minimum is relatively complex, and aims to distinguish relative riskiness of assets, liabilities and lines of business. For example, the asset factors distinguish between the many different asset categories (e.g., bonds versus stocks), and between risk characteristics within categories (e.g., bonds are further delineated by credit rating). Regulatory action is stipulated according to how an insurer's actual capital relates to its minimum RBC amount. If a company's capital dips below its company action level, the company must prepare a comprehensive report to the state insurance commissioner explaining why it fell below and what corrective actions will be taken to increase capital. In the extreme, the state insurance commissioner is compelled to take over the insurer if its capital falls too far below the minimum RBC.

Risk capital—capital required to mitigate the risk that insurance claims and expenses will exceed insurance premium income. In other words, it is the capital required to ensure that an insurance organization will have enough money to meet its financial obligations.

Risk charge—a charge or amount added to premiums to reflect the risk to an insurer's capital for potential insurance losses. If not needed to cover losses, risk charges can be used to fund required risk or operating capital.

Start-up capital—the sum of the pre-operational capital and the risk capital required to start a health insurance organization. For the analysis, the start-up period for risk capital is defined as the three years preceding and the seven years following establishment (i.e. from 2010 through 2019).

Surplus—the excess of assets over liabilities on an accounting basis, also known as capital.

Exhibit B – Operational Functions Performed by Health Plans

Summary of Operations by Functional Category			
Marketing	**Provider & Medical Management**	**Account & Member Administration**	**Corporate Services**
▪ Market research ▪ Plan/product design ▪ Marketing campaigns/ sales ▪ Advertising and public relations ▪ Rating & underwriting	▪ Provider network/ contracting ▪ Provider and program quality administration and reporting ▪ Medical management ▪ Pharmacy management	▪ Enrollment and billing ▪ Claims and encounter administration ▪ Information technology ▪ Customer service ▪ Member communications ▪ Fraud controls	▪ Finance and accounting ▪ Actuarial ▪ Risk management ▪ Legal, compliance, and filing ▪ Corporate executive and governance ▪ Investment services

Source: Developed by Solucia Consulting, consistent with the Sherlock Company's functional mapping.

Representative Industry Expenses by Functional Category			
	Per Member Per Month Costs		
Administrative Costs	**25th Percentile**	**Median**	**75th Percentile**
Marketing	$5.36	$7.46	$9.89
Provider & Medical Management	$2.08	$3.12	$3.87
Account & Member Administration	$8.81	$10.23	$12.16
Corporate Services	$3.85	$4.40	$5.82

Source: Sherlock "Plan Management Navigator," July 2008. The data is from 2007.

EXHIBIT C – DETAILED RESULTS FOR HEALTH CARE CO-OPS OR A PUBLIC PLAN

As noted in the main report, the model results are a function of the various assumptions and actual future outcomes could vary materially from the projections to the extent that actual events differ materially from these assumptions.

This exhibit demonstrates the sensitivities of the significant assumptions. All projection results in this exhibit are for 50 statewide co-ops and national public plan.

(1) Membership and revenue projections

The tables below present projections of membership and premium revenues under the low and high-enrollment scenarios.

Membership Enrollment (in millions)										
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
50 State Co-ops										
Low Enrollment	0.0	0.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
High Enrollment	0.0	0.0	0.0	20.1	23.4	26.7	30.1	33.4	36.7	40.1
National Public Plan										
Low Enrollment	0.0	0.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
High Enrollment	0.0	0.0	0.0	20.1	23.4	26.7	30.1	33.4	36.7	40.1

Premium Revenues (in billions)										
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
50 State Co-ops										
Low Enrollment	$ 0.0	$ 0.0	$ 0.0	$ 11.8	$ 12.8	$ 13.9	$ 15.1	$ 16.4	$ 17.8	$ 19.4
High Enrollment	0.0	0.0	0.0	117.7	147.6	181.8	220.9	265.4	316.1	373.5
National Public Plan										
Low Enrollment	$ 0.0	$ 0.0	$ 0.0	$ 10.6	$ 11.6	$ 12.6	$ 13.7	$ 14.9	$ 16.1	$ 17.6
High Enrollment	0.0	0.0	0.0	106.5	133.6	164.6	200.0	240.4	286.3	338.4

Note that even as membership remains level in the low-enrollment scenario, the premium revenues continue to grow due to medical trend.

(2) Expense levels

Operating expenses (excludes taxes and assessments) relative to premiums will decrease slightly as (a) the membership grows and greater efficiencies are achieved, and (b) medical trend outpaces inflation in operational expenses.

Operating Expenses (as a percent of premium)										
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Health Care Co-ops	N/A	N/A	N/A	8.6%	8.3%	8.0%	7.7%	7.5%	7.2%	7.0%
Public Plan	N/A	N/A	N/A	7.2%	7.0%	6.7%	6.5%	6.2%	6.0%	5.8%

In additional to operating expenses, state premium taxes of 2 percent of premiums, and state/federal guaranty funds and other assessments of 1.5 percent of premiums are assumed in the model.

(3) Net income

Net income in our projection model consists of underwriting gains or losses (premiums less benefit costs less expenses) plus investment earnings. It was assumed that the co-ops do not pay income taxes; otherwise, income taxes would have been deducted in computing net income.

Net Income (in billions)										
	2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
50 State Co-ops										
Low Enrollment										
Accurate Pricing	$0.0	$(0.4)	$(0.4)	$ 0.4	$ 0.5	$ 0.5	$ 0.5	$ 0.5	$ 0.6	$ 0.6
Underpricing	0.0	(0.4)	(0.4)	(0.6)	(0.3)	(0.1)	0.6	0.6	0.7	0.8
Overpricing	0.0	(0.4)	(0.4)	0.6	0.6	0.5	0.5	0.5	0.6	0.6
High Enrollment										
Accurate Pricing	0.0	(0.4)	(0.4)	3.5	5.6	6.1	7.3	8.8	10.5	12.4
Underpricing	0.0	(0.4)	(0.4)	(5.9)	(3.3)	(1.4)	8.4	10.2	12.2	14.5
Overpricing	0.0	(0.4)	(0.4)	5.9	7.0	6.0	7.1	8.6	10.2	12.1
National Public Plan										
Low Enrollment										
Accurate Pricing	$0.0	$(0.3)	$(0.3)	$ 0.3	$ 0.5	$ 0.4	$ 0.5	$ 0.5	$ 0.5	$ 0.6
Underpricing	0.0	(0.3)	(0.3)	(0.5)	(0.2)	(0.1)	0.5	0.6	0.6	0.7
Overpricing	0.0	(0.3)	(0.3)	0.5	0.6	0.4	0.4	0.5	0.5	0.6
High Enrollment										
Accurate Pricing	0.0	(0.3)	(0.3)	3.2	5.1	5.5	6.6	8.0	9.5	11.3
Underpricing	0.0	(0.3)	(0.3)	(5.3)	(2.9)	(1.2)	7.6	9.3	11.1	13.1
Overpricing	0.0	(0.3)	(0.3)	5.3	6.4	5.4	6.5	7.8	9.3	11.0

Note: Dollar amounts may not add to total due to rounding.

(4) Capital requirements

The primary driver of the capital requirements is the regulatory RBC standards, which are mainly a function of the level of health care claims. Consequently, as co-op or public plan membership grows, capital requirements grow. Although the RBC formula is quite complex and includes a wide array of operational data, the resulting capital requirements for our modeled co-ops and public plan are a relatively stable function of claims or premiums. Note though that other health insurance organizations, especially those with riskier asset portfolios, could have RBC results materially different from the model.

(5) Capital financing

The primary focus of the modeling was to assess the capital needs for the proposed start-up health care co-ops or a public plan. As noted in the report, it was assumed that risk-capital infusions would be grants from the federal government and that pre-operational start-up expenses would be interest-free loans from the federal government. Any such loans would be repaid in later years as the co-ops' or public plan's earnings become sufficient to meet regulatory capital requirements.

The capital infusions required are shown in the table below. The yearly amounts and "Total" column represent grants or loans from the Treasury, while the column labeled "Loan Repay" represents the eventual loan repayments to the Treasury.

Required Capital Infusions from Grants and/or Loans (in billions)											
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total	Loan Repay
50 State Co-ops												
Low Enrollment												
Accurate Pricing	$ 0.0	$ 0.4	$ 0.4	$ 1.6	$ 0.0	$ 0.0	$ 0.0	$ 0.0	$ 0.0	$ 0.0	$ 2.4	$ 0.8
Underpricing	0.0	0.4	0.4	2.7	0.5	0.4	0.0	0.0	0.0	0.0	4.4	0.8
Overpricing	0.0	0.4	0.4	1.3	0.0	0.0	0.0	0.0	0.0	0.0	2.1	0.8
High Enrollment												
Accurate Pricing	0.0	0.4	0.4	15.6	0.0	0.0	0.0	0.0	0.0	0.0	16.4	0.8
Underpricing	0.0	0.4	0.4	26.8	9.0	9.0	0.0	0.0	0.0	0.0	45.6	0.8
Overpricing	0.0	0.4	0.4	12.8	0.0	0.0	0.0	0.0	0.0	0.0	13.6	0.8
National Public Plan												
Low Enrollment												
Accurate Pricing	$ 0.0	$ 0.3	$ 0.3	$ 1.3	$ 0.0	$ 0.0	$ 0.0	$ 0.0	$ 0.0	$ 0.0	$ 1.9	$0.5
Underpricing	0.0	0.3	0.3	2.5	0.4	0.3	0.0	0.0	0.0	0.0	3.8	0.5
Overpricing	0.0	0.3	0.3	1.1	0.0	0.0	0.0	0.0	0.0	0.0	1.7	0.5
High Enrollment												
Accurate Pricing	0.0	0.3	0.3	14.3	0.0	0.0	0.0	0.0	0.0	0.0	14.9	0.5
Underpricing	0.0	0.3	0.3	24.5	8.2	8.2	0.0	0.0	0.0	0.0	41.5	0.5
Overpricing	0.0	0.3	0.3	11.8	0.0	0.0	0.0	0.0	0.0	0.0	12.4	0.5

Note: Dollar amounts may not add to total due to rounding.

Even in the scenarios where the co-ops and public plan have positive net income in the first few years of operations, the income level may not be enough to fund regulatory capital requirements. Consequently, the co-ops and public plan need access to capital for a number of years, which varies by scenario. Under the low-enrollment/overpricing scenario, the co-ops and the public plan continue to need capital infusions through 2013. Under the high-enrollment/underpricing scenario, the co-ops and the public plan need capital infusions through 2015.

EXHIBIT D – REFERENCES

This report relied on an understanding of bills currently under consideration and the work of others with respect to health care reform legislation. Sources included the following:

(i)   Kaiser Family Foundation document comparing the key provisions for the following major health care reform proposals:

    a) Senate Finance Committee *America's Health Future Act of 2009* (as of Sept. 22, 2009)

    b) Senate HELP Committee *Affordable Health Choices Act* (June 9, 2009)

    c) House Tri-Committee *America's Affordable Health Choices Act of 2009* (H.R. 3200) (June 19, 2009)

    d) President Obama Principles for Health Reform (Feb. 26, 2009)

(ii)   Congressional Budget Office's Review of various proposals, including:

    a) June 15, 2009 analysis to Sen. Edward M. Kennedy

    b) July 14, 2009 analysis to Rep. Charles B. Rangel

    c) July 26, 2009 analysis to Rep. Dave Camp

    d) Sept. 16, 2009 analysis to Sen. Max Baucus

    e) Sept. 22, 2009 analysis to Sen. Max Baucus

(iii)   U.S. Census Bureau report of September 2009

(iv)   Congressional Budget Office analysis dated July 24, 2007 addressed to Sen. Max Baucus analyzing the number of uninsured children who are eligible for Medicaid or CHIP programs

(v)   American Academy of Actuaries paper, *Critical Issues in Health Reform: Administrative Expenses* (September 2009)

(vi)   The NAIC's 2008 risk-based capital formula for health care companies

(vii)   America's Health Insurance Plans report, *Individual Health Insurance: New Studies Shed Light on Issues of Affordability, Access, and Plan Design* (January/February 2004)

(viii)   Congressional Budget Office, *Key Issues in Analyzing Health Insurance Proposals* (December 2008)

(ix)   Milliman USA, *2009 Milliman Medical Index* (May 2009)

(x)   Leif Associates Inc., Report: *The Business Case for Coverage of Tobacco Cessation*

(xi)   Aon Consulting, *Spring 2009 Health Care Trend Survey*