Discussion: Economies of Scale

In generic terms, **economies of scale** result in a reduction in average costs caused by increased output level. In other words, by increasing the level of production of a good or service, the average cost of producing each individual unit is decreased.

What are the **causes** of economies of scale?

Labor and Managerial Specialization

- Frequent practice leads to greater skill, efficiency
- High-paid workers can focus on high-value tasks, with support staff addressing lower-level tasks
- Less loss of time shifting from one job to another

Efficient capital

- A larger budget allows for more advanced technology which may operate more efficiently

Lower input costs

- Costs of inputs may be less due to volume discounts, lower transaction costs, reduced inventories, etc.

Distribution of costs over a larger base

- Distribution of fixed costs
  - Administration and management
  - Physical infrastructure
- Distribution of advertising costs
- Distribution of "start-up" costs
- Costs of research, planning, design, roll-out

Questions to help identify where economies of scale might be achieved:

Are staff idle, unpracticed, or employed in inefficient ways?

Does more efficient technology exist?

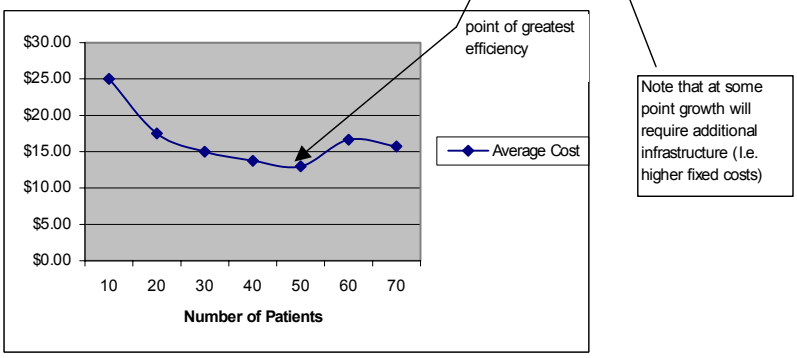
Which functional areas have high infrastructure costs?

What administrative functions can be shared?

Are new programs expensive to roll-out in LHJs?

Example of the efficient distribution of fixed costs over larger operations:

Number of patients	10	20	30	40	50	60	70
Variable Costs (per patient)	$10.00	$10.00	$10.00	$10.00	$10.00	$10.00	$10.00
Fixed Cost	$150.00	$150.00	$150.00	$150.00	$150.00	$400.00	$400.00
Total Cost	$250.00	$350.00	$450.00	$550.00	$650.00	$1,000.00	$1,100.00
Average Cost	$25.00	$17.50	$15.00	$13.75	$13.00	$16.67	$15.71



***Internal* economies of scale** are efficiencies within the firm or industry that allow decreasing average costs. These efficiencies may be technical, managerial, financial, marketing, commercial, or in research and development. ***External* economies of scale** are efficiencies reached independent of the entity providing the service, often because of a localized concentration of similar providers. Examples of factors which may lead to external economies of scale include a highly trained local labor supply, local supply of needed parts or services, or a good local transportation infrastructure.

What are possibilities for external economies of scale?

Diseconomies of scale are an *increase* in average costs as production increases. Possible causes include the following: • Managerial problems in efficiently controlling and coordinating a larger unit's operations • Fragmented decision-making authority • Increased time and resources dedicated to communication and coordination. Increased bureaucratic red tape • Less ownership by staff, greater opportunities for staff who don't pull their own weight • Increased marketing and distribution costs over a diverse and geographically dispersed area	What are potential diseconomies of scale that might occur in larger jurisdictions?
Economies of scope are efficiencies gained due to the *breadth* of operations, making it more efficient to offer a range or products or services than to offer each product or service individually. For example, a jurisdiction may consider doing in-house lab work in addition to sampling to save time in receiving results, maximize use of existing capital infrastructure and staff currently employed in environmental sampling.	Are there additional services we could provide more efficiently given staff and infrastructure? What are the financial incentives to explore this?
Minimum efficient scale is the minimum size at which efficiency is reached: the smallest level of output at which lowest average costs are achieved.	What is the minimum efficient scale for individual departments or functions? What is the absolute minimum size of an LHJ? Of a unit providing a particular service?

Key Issues Related to Public Health in Particular

Diseconomies of scale in some functions might be inevitable consequences of achieving economies of scale in other areas. It is important to look at the *net effects* on both efficiency and quality of service, examining system-wide effects of collaboration between or merging of lhjs. Possibilities exist for a continuum of opportunities, ranging from the sharing of key administrative staff to collaborating on certain functions to outright merging.

Operational, as opposed to administrative, marketing, or financial, economies of scale are derived from *functional efficiencies*, not department-wide efficiencies. Different public health functions may have different minimum efficient operating sizes, realizing economies at different levels of service. We need to look at individual functions and where economies occur, considering collaboration where it makes sense, or total collaboration if net gains justify it.

Interviews with other states pointed to the practical impediments that may prevent more empirical, population-based consolidation. Historical relationships and current politics between neighboring health departments/districts may facilitate or impair collaboration.

Sources:

Applying Cost Analysis to Public Health Programs, Center for Disease Control and Prevention

Center for International Trade Studies (CITS) website; University of Missouri – Columbia; *http://www.ssu.missouri.edu/SSU/AGEC/CITE/*

Economics – Principles, Problems, and Policies; McGraw-Hill; 1996

Situations in Public Health Which May Affect Opportunities for Economies of Scale

May Create Opportunities	How Opportunities Are Created	May Limit Opportunities	How Opportunities are Limited
Capital-intensive functions	Increasing population served allows for sharing of fixed costs.	Low population density; geographic spread of population	Centralized staffing may result in increased travel times to reach outlying populations.
Administrative staff and specialized labor which can be shared	Increasing population served allows for sharing of administrative costs.	Rough terrain or poor transportation infrastructure	Difficult travel environment can increase costs of sending centralized staff to outlying populations
Increased staffing efficiencies	Increasing scale of operations allows for labor and management specialization. Appropriate administrative support frees high--paid staff to focus on high-value tasks.	Labor-intensive functions	Labor costs may increase in direct proportion to population served, resulting in no efficiencies.
Efficient use of capital	Larger budgets may allow investment in technology to achieve greater efficiencies than currently reached.	High cost and complexity of implementation	MIS infrastructure required to share information; costs of aligning salary levels, retirement plans, etc.; costs of aligning differing missions, work styles, and organizational cultures
Lower input costs	Purchase pooling can lead to volume discounts. Centralized storage can reduce duplication in inventory, spoilage, etc.	Inefficient or unwieldy management	Costs and inefficiencies associated with management of a large organization may outweigh benefits.
Distribution of communications costs	Costs of public outreach campaigns can be shared over a larger population base.	Higher communication costs and slower decision making ability	May impede effective management of larger jurisdiction.
Distribution of start-up costs	Research, planning, design, and roll-out costs associated with new services can be shared over a larger population base.	Negative relations between jurisdictions	May effectively negate opportunities for collaboration.
Established labor base in surrounding community. Ready availability of other necessary inputs.	These external economies of scale occur through industry concentration or clustering.		
Positive relations between jurisdictions			