

INCREASING STAKEHOLDER PARTICIPATION IN CLUSTER IDENTIFICATION

By

LUKAS C. BRUN

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Executive Summary

Industry cluster analysis has become an important tool in state and local economic development planning in recent years. Although generally conceived as an expert-led technical analysis, cluster analysis can be reframed to engage stakeholders in a collaborative process. This paper is to illustrate how one community pursued a collaborative approach to cluster identification and the costs and benefits of the method. It finds that increased stakeholder participation in the cluster identification stage improved the analytical quality of the analysis, developed community acceptance of the results, and defined a new industry cluster to accommodate stakeholder preferences. The primary cost was the time and money required to implement a collaborative approach to cluster identification.

Introduction

Industry clusters are geographic concentrations of interdependent firms and supporting institutions such as universities, professional organizations, or trade associations (Porter 2000). Cluster analysis has become a mainstay of economic development analysis with numerous studies conducted at the national, state, county, and metropolitan level because of its usefulness in guiding economic development policy (Morgan 2004). One problem with cluster analysis is that it has tended to be an expert-driven, “top-down” process in which stakeholders are left out of shaping the economic development priorities for their regions (Cortright 2006).

The purpose of this paper is to describe a collaborative method for cluster identification and the value it added within the context of a county-level economic development planning process. The specific research question addressed by the paper is, “*what are the costs and benefits of stakeholder participation in cluster identification?*” This is an important question to answer because the traditional model of cluster analysis overlooks the value of local knowledge by not sufficiently incorporating stakeholders in the cluster identification phase. The case illustrates how collaborative processes can achieve benefits not achievable by expert-driven approaches. The paper proceeds by reviewing the literature on the general costs and benefits of collaborative processes and how cluster analysis has traditionally been conducted as an expert-driven process. After a brief section on the case method used in this paper, it reports how the collaborative process was structured and the value of the approach. A final section summarizes the findings about the costs and benefits of increasing stakeholder participation in cluster identification.

Literature Review

Studies of stakeholder participation in governmental decision-making have found that it improves information gathering (Forester 1989; Beirerle 2002), develops a wider range of policy options and evaluative criteria (Innes 1996), develops political support for policies (Isaacson 1986), improves the quality of decisions (Beirerle 2002), enhances the likelihood of policy implementation and success (Whyte 1991), and avoids implementation delays from citizen appeals and litigation (Moote and McClaren 1997). Skepticism about stakeholder inclusion also exists. Objections include the quality of outcomes (Coglianese 1999), the time or cost required to have a meaningful process (Hendriks 2007), or fundamentally misguided because the electoral process is more effective in deciding outcomes in a pluralist democracy than is collaboration among stakeholders (Mouffe 2000).

While economic development seems to have joined in the “collaborative turn” (Healy 1993) of planning and other academic fields, one stage of cluster analysis – identification – has remained in the purview of experts because of the perception that it is a highly technical area of analysis. The point of this paper is to illustrate how one community pursued a collaborative approach to cluster identification and the costs and benefits of the method.

Three stages of cluster analysis can be defined: definition, identification, and activation. [Please see Appendix A]. In the definition stage, the network of industries needed to create a final good is identified, and groupings of industries (i.e., “clusters”) are defined according to the strength of the buyer-supplier relationship among them. Traditional cluster analysis tends to define clusters quantitatively using industry classification systems as their organizing framework (Porter 2003, Feser 2004, Indiana 2007, Sonis et al 2008) that may or may not be refined by gathering additional qualitative or quantitative data about localized effects in the cluster (Rosenfeld 2002, Mayer 2005, Goldstein and Feser 2008, Almasri and Shakur 2008). In the activation stage, strategies to develop the cluster are identified and acted upon. Typical activation strategies include recruitment, retention, and the encouragement of entrepreneurship of firms belonging to cluster industries.

This paper focuses on the identification phase of cluster analysis. In the identification stage, criteria are used to evaluate the suitability of clusters for a specific market or geographic area. Commonly used selection criteria in traditional cluster analysis are location quotient (a measure of labor concentration in an area), wages, and growth. The clusters are ranked using an average among the criteria and a few are chosen as the regional “focus clusters.” The California Economies Project (2007) is an example of this method of cluster identification. Variation on this general procedure has been on the number and type of criteria used to select the clusters. For example, Goldstein

et al (2007) develop 12 criteria and create indexes emphasizing different priorities that a region may have such as job growth, job retention, or a balance between these two goals. Indiana (2007) emphasizes the importance of criteria measuring the “rurality” of clusters to identify firms preferring rural locations.

One difficulty with the cluster identification phase is that, because of resource constraints, regions can effectively focus on fewer clusters than identified as feasible for the area. The difficulty then becomes in choosing among the remaining set of clusters to determine the “focus clusters” for a region. One common solution is for experts to simply select among the remaining clusters using their expert knowledge about the region. This practice is considered by Martin and Sunley (2003) as little better than the discredited industrial policy of “picking winners” and susceptible to political influence. In addition, the practice is non-transparent and can lead to the possibility that experts pick winners without the benefit of local knowledge (Cortright 2006).

Another common practice is to ask community members or business leaders to choose among the clusters. The difficulty with this method is that the participants will select clusters based on the name of the cluster rather than on its characteristics. For example, a participant might select the “architecture and engineering” cluster because of an affinity towards architecture and engineering firms, or alternatively, not select it because she feels that not enough firms exist in the area to make it a viable option. Asking members of the public to choose on the name of the cluster overlooks the strength of the cluster “mode of inquiry” (Feser and Luger 2002) in that a cluster has numerous supporting industries that may only be tangentially related to the name of the cluster. This problem is avoided by asking members of the public to express their preferences about the characteristics of firms in their area, such as the preferred size or growth potential of the establishment. This later approach is the method adopted in the case described below.

Methods

This paper uses a single case study approach to identify the costs and benefits of an innovative method to cluster identification. The conclusions about the process and its value to cluster analysis were developed from personal observations during my role as a consultant on an economic development planning project for Chatham County, North Carolina from March 2007 to June 2008. In order to reduce bias in the account, the principal consultant and client in this case were asked to act as reviewers about statements of fact presented in the case study. To ensure that the approach to cluster identification is innovative, cluster analyses from other communities, cluster guides, articles, and courses about cluster analysis were reviewed. The result of the extensive review was that the method employed in this case is not known to have been reported elsewhere.

The use of a single case study as a research strategy has limitations to scientific inference (King, Keohane, and Verba 1994). The principal problem is that the persons and events may be so unique to the case that the results are not generalizable. The goal of this research, however, is not to seek generalized results, but rather to identify the costs and benefits of an innovative practice that may be preferable under certain conditions to existing cluster identification techniques. Additional cases of the approach would help establish the basis for generalized results.

Case Description

This section provides background information about the project, how the collaborative cluster identification process was structured, and the results of the innovative method.

Project background The County’s economic development corporation (the “EDC”) entered into a contract with consultants to conduct a cluster analysis as part of an economic development strategic plan. Economic development priorities had become a contentious issue in the county because portions of the county experiencing rapid residential and job growth had different priorities than portions facing economic stagnation or decline. The goal of the economic development strategic plan was to develop shared goals about the economic development priorities of the county.

The role of the citizen’s Task Force changed from a passive, listening role to an active role in identifying the County’s focus clusters. The change in roles signaled the willingness of the EDC to include citizens in its decision-making process.

The EDC emphasized to the consultants the importance of engaging the public in developing the strategic plan. Public participation was important to the EDC because it wanted to counter the perception common in the county that it worked behind closed doors. To meet the EDC's objectives, the consultants organized district-level public meetings and a citizen's task force (the "Task Force"). The public meetings asked participants about the types of businesses they wanted in their community. The meetings revealed a strong preference for small and medium-sized businesses, businesses with a history of locating in rural areas, and "green businesses." By "green businesses," participants meant both renewable energy production and businesses with a limited environmental impact.

The twenty-member Task Force consisted of a geographically representative group of participants from public meetings, business owners and managers, and EDC members who expressed an interest in further developing the strategic plan. One role the Task Force eventually took was to identify the region's focus clusters by choosing, with the assistance of the consultants, among criteria they thought important for clusters to have in the county.

Process The consultants developed a two-stage process to allow the Task Force to assist in the identification of the region's focus clusters. Appendix B illustrates the difference between the traditional and collaborative model of cluster identification. The first stage consisted of the consultants screening clusters defined by Feser (2004) against basic feasibility criteria. Feasibility criteria were location quotient, wages, and growth. Out of the sixty defined clusters, twenty-one were determined as feasible for the market area for further evaluation by the Task Force.

The second stage consisted of the Task Force "voting" on additional screening criteria. These criteria were developed from preferences expressed in public meetings about the size and rural location of firms and criteria used by Goldstein et al (2007). The consultants developed questions for Task Force members to consider about each criterion. For example, one question asked the importance of rapid growth while another asked the importance of preserving the rural character of the county. While some people might prefer both rapid growth and a rural character, the point of the exercise was to understand that, all other things being equal, a preference for rapid growth would reduce the rural character of the region. In short, the purpose of the exercise was to understand the tradeoffs among values made by the community about their economic development priorities. The exercise allowed members of the general public without an in-depth understanding of cluster analysis to choose what values they wanted to emphasize in the region.

The screening criteria were categorized to emphasize different economic development goals a region might have. The first category of criteria measured how many people were employed in the region by cluster industries. Emphasis of these criteria indicated a preference toward keeping the current mix of industries in the area. The second category of criteria measured the average wage of industries in the cluster. Emphasizing these criteria indicated a preference toward increasing the average wage of the area. The third category of criteria measured industry growth in the cluster. Emphasizing these criteria indicated a preference toward industries with rapid growth potential. The fourth category measured the percent of medium and small businesses in the cluster. Emphasizing these criteria indicated a preference toward medium and small enterprises. A fifth category measured the extent to which establishments in the cluster located in rural areas, while the sixth category measured the extent to which headquarters of firms in the cluster were located in the region.

Task Force members were each provided 100 points to allocate toward the additional screening criteria. They could distribute their points in any manner they wished as long as their total added to 100. The average number of points received by each criterion was used as its weight in the constructed index. The constructed index was then applied to the remaining 21 clusters to develop a ranking of clusters. The results of the exercise are in Appendix C.

The consultants also calculated four indexes to contrast the economic development goals of the Task Force with those of a hypothetical region. One index emphasized growth and earnings in the area (the “growth and earnings index”). This index assumed that the only criteria that mattered were those that led to rapid growth of employment and income for the region. Other indexes emphasized how many people in the region were employed by cluster industries (“size and completeness index”), how evenly clusters were distributed across the market area (“location index”), and a baseline index that provided equal weight to size, growth, earnings, regional distribution, and miscellaneous firm characteristics of the clusters (“equal weight index”). The construction of these indexes and the economic development goals they emphasize closely reflected the method in Goldstein et al (2007).

The consultant indexes also served to illustrate the counterfactual, i.e. what would have happened if the Task Force hadn’t been used to identify regional preferences. In the absence of the preferences expressed by the Task Force about the characteristics of the clusters they preferred in the region, the consultants would have had to select what economic development goals to emphasize. In effect, the consultants would have had to choose for the region its economic development goals. The true value of the innovative process is that the community could decide for itself what goals it wanted to pursue.

Resulting Criteria and Clusters The Task Force Index emphasized medium and small enterprises, growth, a rural preference for firm location, and earnings. This index was different than the four indexes calculated by the consultants, including the baseline “equal weight index” which weighed all criteria equally. The “growth and earnings” index emphasized wages, growth, and small business. The index measuring regional employment in the cluster (“size and completeness index”) emphasized criteria measuring the amount of employment in the cluster. The “location index” emphasized small businesses, rural locations, and headquarters. A comparison of the Task Force and consultant indexes is provided in Appendix D.

<p>Cluster Criteria Emphasized By Stakeholders</p> <ul style="list-style-type: none"> • Small Businesses • Growth • Rural Location • Earnings <p>Cluster Criteria Emphasized By Consultants</p> <ul style="list-style-type: none"> • Employment (“size and completeness index”) • Earnings, growth, and small businesses (“growth and earnings index”) • Small business, rural location, and headquarters (“location index”)

The *ranking* of clusters generated by the Task Force Index was also unique when compared to the consultant indexes. A comparison of the top ten clusters identified by each index is provided in Appendix D, table D1.

When the top ten clusters from the various indexes are looked at as a whole, the Task Force Index clusters were most similar to the Equal Weight Index and most dissimilar to the Location Index. Nine of the top ten clusters identified by the Strategy Task Force Index were also in the top ten of the Equal Weight Index. Eight clusters were in each of the Growth and Earnings and Size and Completeness Index results. Only four were present in the Location Index results. The number of similar clusters among the various indexes is provided in Appendix D, table D2.

After reviewing the results, the EDC and consultants agreed that the top six clusters identified by the Task Force would be the county’s “focus clusters.” In addition, a renewable energy cluster was added to the final list of focus clusters to accommodate preferences expressed in public meetings and the Task Force about developing the existing base of companies in the county producing alternative transportation fuels. These seven focus clusters would be the primary targets for activation efforts in the county. While more clusters could have been selected as focus clusters, concern was expressed by the EDC that selecting more than a handful of clusters would exceed the capacity of the two-person professional staff of the EDC.

Benefits and cost

This section discusses the benefits and cost of the collaborative approach to cluster identification. The chief benefits of the approach were achieving a better understanding of the characteristics of clusters desired by the

community, acceptance of the results of the cluster analysis, and the definition of a new renewable energy cluster for the county. The chief cost was the additional time and money required to develop an effective collaborative strategy to cluster identification.

Benefits

- Improved analysis. Stakeholder participation improved the capability of consultants to determine the preferences of the community about the characteristics of clusters it desired in the community. Stakeholders developed evaluative criteria and determined what tradeoffs should be made among them to select clusters appropriate for their region. In the absence of stakeholder participation, standard practice would have identified clusters emphasizing different cluster characteristics and economic development priorities.
- Community acceptance of cluster results. The community accepted the list of clusters generated during the collaborative process as the county's focus clusters. The cluster exercise was one example during the planning process that indicated the willingness of the EDC to open the process to citizens, and countered the perception common in the county that the EDC worked behind closed doors. The clusters identified in the case were not challenged in either subsequent public meetings or in the on-going cluster activation stage. In addition, the entire economic development plan, including the cluster analysis, was formally adopted by the municipal and county governing boards. This is not something to be taken lightly in an activist community like Chatham County.
- Challenged consultants to define a renewable energy cluster and analyze where the county fits in the renewable energy sector. Participants in district-level meetings expressed preferences about "green businesses" and "alternative energy." In addition, the Task Force expressed interest in expanding the existing biofuels base in the county. The consultants considered that the best way to address these preferences was to define a renewable energy cluster and present where the county was positioned in the sector. Renewable energy was added as an additional focus cluster.

<p>Chatham County's Focus Clusters</p> <ul style="list-style-type: none">• Architecture & engineering services• Technical & research services• Basic health services• Pharmaceuticals• Information services• Higher education & hospitals• Renewable energy
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Costs

- Additional time and money. The most significant cost was the additional time and money required to organize and assist in the management of Task Force meetings. The consultants estimate that the collaborative process added between 25-33% to the cost of a traditional cluster analysis.
Some of this additional time and cost could have been avoided by selecting other methods for gathering citizen preferences. Surveys, interviews, and public comment periods are valid options for soliciting citizen input (Jolley 2007). The EDC rejected these options because it wanted a facilitated group of diverse people working together to choose what tradeoffs would be made in determining economic development goals. They held the view that developing relationships among people of various economic backgrounds would build the cooperation necessary to solve other problems in the county.

Conclusions

The case illustrates that stakeholders can be included in even the most technical analyses to help shape the economic development priorities of their regions. Stakeholder participation in cluster identification can lead to local knowledge being used to select what clusters are appropriate for a region. The benefits recorded in this case of stakeholder participation in cluster identification are improved information about community preferences, community acceptance of results, and the development of new cluster definitions. To derive these benefits the process has to be appropriately structured to ask questions that stakeholders can meaningfully answer. Asking stakeholders to express preferences among a set of criteria designed to identify different economic development goals is an appropriate use of citizen groups.

BIBLIOGRAPHY

- Almasri, Abdullah and Ghazi Shakur. 2008. "Clustering Using Wavely Transformation" in Karlsson, Charlie. (ed.) 2008. *Handbook of Research on Cluster Theory* (Edward Elgar Publishing: Northampton, MA) 169-186.
- Beeton, David, Lisa Shearer, Martin Houghton, and Fiona Dodd. 2007. "Investigating Models of Clustering" Trends Business Research: Newcastle upon Tyne, England. Available at [http://www.durham.gov.uk/cdsp/.../\\$file/Investigating Models of Clustering.pdf](http://www.durham.gov.uk/cdsp/.../$file/Investigating%20Models%20of%20Clustering.pdf)
- Beierle, Thomas C. 2002. "The Quality of Stakeholder-Based Decisions" *Risk Analysis* 22(4):739-749.
- California Regional Economies Project. 2007. "Industry Clusters of Opportunity User Guide." www.coecon.com/Reports/ECONOMY/ClustersGuide.pdf
- Ciriacy-Wantrup, S. V. 1947 "Capital Returns from Soil-Conservation Practices" *Journal of Farm Economics*, 29(4):1181-1196.
- Coglianesse, C. 1999. "The Limits of Consensus" *Environment*, 41(3):28-34.
- Cortright, Joseph. 2006. "Making Sense of Clusters: Regional Competitiveness and Economic Development." Discussion paper prepared for the Brookings Institution Metropolitan Policy Program, Brookings Institution, Washington, D.C.
- Davies, J. Clarence. 1995. *Comparing Environmental Risks: Tools for Setting Government Priorities*. Washington, DC: Resources for the Future
- Economic Development Administration. 2008. "Know Your Region: A Template for Future Prosperity, Instructor's Manual" Available at <http://KnowYourRegion.org>
- Feser, Edward and Michael Luger. 2002. "Cluster Analysis as a Mode of Inquiry: Its Use In Science and Technology Policymaking In North Carolina". *European Planning Studies* 11: 11-24.
- Feser, Edward. 2004. "An Updated Set of Benchmark Value Chain Clusters for the United States, 1997" Available <http://www.urban.uiuc.edu/faculty/feser/publications.html>
- Forester, John. 1989. *Planning in the Face of Power*. Berkeley, CA: University of California Press
- Forester, John. 1999. *The Deliberative Practitioner: Encouraging Participatory Planning Processes* Cambridge, MA: MIT Press
- Goldstein, Harvey and Jason Jolley. 2007. "Regional Vision Plan I" UNC-Chapel Hill: UNC Center for Urban & Regional Studies.
- Goldstein, Harvey, Ed Feser, Allan Freyer, Brady Gordon, and Micah Weinberg. 2008. "Regional Vision Plan Integration and Implementation: Phase II Final Report" Chapel Hill, NC: UNC Center for Urban & Regional Studies.
- Gollub, James. 2004. "Clusters 2.0: The Local Reality of Globalization" ICF Consulting Available at: http://www.icfi.com/Markets/Community_Development/doc_files/clusters-globalization.pdf

- Gollub, James. 1997. "Cluster-based Economic Development: A Key to Regional Competitiveness" (Washington, D.C.: U.S. Economic Development Administration)
- Habermas, J. 1990. *Moral Consciousness and Communicative Action*. Cambridge, Mass.: MIT Press.
- Mayer, Haike 2005 "A Guide for Analyzing Industry Clusters In Regional Economies" *Economic Development Journal* (Fall 2005):40-53
- Heifetz, Ronald A. 1994. *Leadership without Easy Answers*. Cambridge, Mass: Belknap Press of Harvard University Press.
- Healey, Patsy 1993. "Planning Through Debate: The Communicative Turn in Planning Theory" in Frank Fischer and John Forester (eds.) *The Argumentative Turn in Policy Analysis and Planning* (2ed) (Durham: Duke University Press), pp.242-253.
- Hendriks, C. M., Dryzek, J. S., & Hunold, C. 2007. "Turning Up the Heat: Partisanship in Deliberative Innovation." *Political Studies*, 55(2), 362-383.
- Innes, Judith. 1996. "Planning through Consensus Building: A New View of the Comprehensive Planning Ideal." *Journal of the American Planning Association* 62: 125-137.
- Indiana Business Research Center. 2007. *Unlocking Rural Competitiveness: The Role of Regional Clusters* <http://www.ibrc.indiana.edu/innovation/reports.html>
- Isaacson, P. 1986 "Pollution, Regulation and Public Sensibility" *Environmental Impact Assessment Review* 6:229-232.
- Jolley, Jason, Brent Lane and Lukas Brun. 2008 "Chatham County Economic Development Strategic Plan" Chapel Hill, NC: UNC-CH Center for Competitive Economies Available at <http://www.chathamcdc.org/resource-center/stategic-plan>
- Jolley, Jason. 2007. "Public Involvement Tools in Environmental Decision-Making: A Primer for Practitioners" *Journal of Extension* 45:2.
- Karlsson, Charlie. (ed.) 2008. *Handbook of Research on Cluster Theory* (Edward Elgar Publishing: Northampton, MA).
- King, Gary, Robert O. Keohane, and Sidney Verba. 1994. *Designing Social Inquiry: Scientific Inference in Qualitative Research*. Princeton, N.J.: Princeton University Press.
- Kretzmann, John P. and John McKnight. 1993. *Building Communities From The Inside Out : A Path Toward Finding and Mobilizing a Community's Assets*. Chicago, IL:Northwestern University Press
- Martin, R., and P. Sunley. 2003. "Deconstructing Clusters: Chaotic Concept or Policy Panacea?" *Journal of Economic Geography* 3: 5-35.
- Marshall, Alfred. 1920 *Principles of Economics* London: Macmillan.
- Moote, MA and McClaran, MP. 1997. "Viewpoint: Implications of participatory democracy for public planning." *Journal of Range Management* 50(5):473-481

- Morgan, Jonathan Q. 2004. "Clusters and Competitive Advantage: Finding a Niche in the New Economy". *Popular Government* Spring/Summer: 43-54.
- Mouffe, C. 2000. *The Democratic Paradox*. London: Verso Press.
- Porter, Michael E. 2000. "Location, Competition, and Economic Development: Local Clusters in a Global Economy", *Economic Development Quarterly* 14(1): 15-34.
- Porter, Michael E. 2001. *Clusters of Innovation: Regional Foundations of U.S. Competitiveness* Washington, D.C.: Council on Competitiveness.
- Porter, M. E. 2003. "The Economic Performance of Regions" *Regional Studies* 37:549-678.
- Rosenfeld, Stuart A. 2002. "A Governor's Guide to Cluster-Based Economic Development" Washington, D.C.: National Governors Association
- Sonis, Michael, Geoffrey Hewings, and Dong Guo. 2008. "Industrial Clusters in the Input-Output Economic System" in Karlsson, Charlie. (ed.) *Handbook of Research on Cluster Theory* Edward Elgar Publishing: Northampton, MA pp.153-168.
- Whyte, William Foote. 1991 *Social Theory For Action: How Individuals And Organizations Learn To Change*. Newbury Park: Sage Publications.
- Yuzon, Michael. 2007 "Economic Development Strategic Framework" Los Angeles Department of Community Development. (cited as Los Angeles Area Cluster Analysis in text) Available at http://www.lacity.org/cdd/home_report_edsf.html

Appendix A – Models and Phases of Cluster Analysis

	Traditional	Modified Traditional	Collaborative Model
Definition	qualitative: ad hoc def'n (ex: Marshall 1920)	quantitative + qualitative: national benchmarks supplemented by local knowledge (Rosenfeld 2002)	modified traditional
	quantitative: NAICS-based (Porter 2003); NAICS-based national benchmarks w/ input-output modeling (Feser 2004)	quantitative: national benchmarks + local effects (Goldstein and Feser 2008; Almasri and Shakur 2008)	
Identification	criteria based (ex: California Economies Project 2007; Goldstein et al 2007)	criteria based + community selection (ex: Rosenfeld 2002; Porter)	2-stage (experts + community) criteria-based selection (Jolley, Lane, and Brun 2008)
Activation	implementation plan (ex: Los Angeles Area Cluster Analysis 2007)	cluster development (ex: California Economies Project 2007; Gollub 2004)	modified traditional

Appendix B – Comparison between Cluster Identification Methods

A Comparison of Traditional and Collaborative Cluster Identification Methods

Traditional Model

- Gather data on each cluster's employment size, labor concentration, employment growth, and wages in the region
- Rank clusters according to each of the four criteria
- Develop method for how to weight criteria
 - "It is up to individual regions to determine how to weight each criteria and apply them to planning, program development, and resource allocation and implementation." California Economies Project 2007, p.22
- Select focus clusters

Collaborative Model

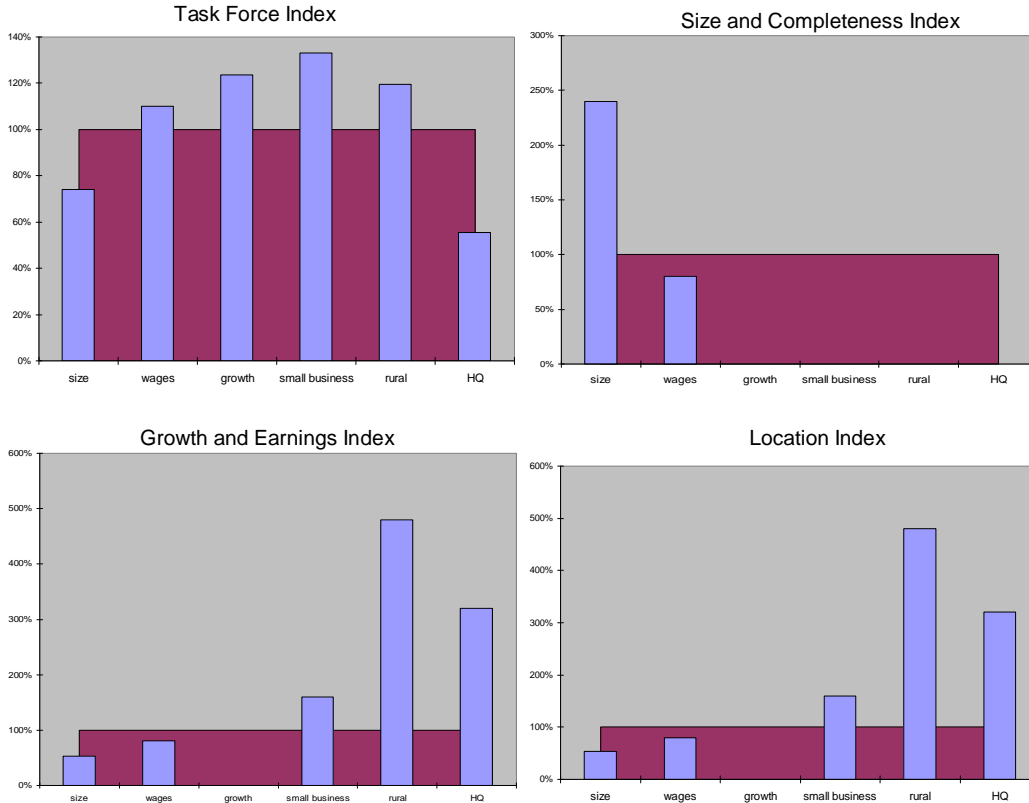
- Phase 1: First order screens
 - Gather data on each cluster's labor concentration, employment growth, and wages
 - Identify clusters that meet thresholds for additional analysis
 - Examples of thresholds can be found in Goldstein 2007. These will be levels that serve as minimum performance standards for clusters (ex: $LQ > 0.85$)
 - Gather data on additional selection criteria for each cluster
 - Goldstein (2007) used 12 criteria
 - Jolley, Lane, and Brun (2008) used 16 criteria
 - More is not necessarily better. Goal is to identify criteria that are important to analysts and the community
 - Rank clusters on how they perform on each criterion (ex: 1-21)
- Phase 2: Community Preferences
 - Provide community participants with definitions of criteria and how they are important to their community.
 - Examples of these "considerations" can be found in Jolley et al (2008)
 - Ask participants to place points on criteria that are important to them or that they think are important characteristics for clusters to have in their region.
 - The total number of points must equal 100 for each participant
 - Consultants sum up the points for each criterion and divide by the number of participants. The result is the index weights.
 - Multiply index weights by the rank for each cluster derived in Phase 1
 - The result will be a raw index value for each cluster that can be standardized from 0-100.
 - Rank order clusters and choose how many clusters on which to focus efforts
 - The number of clusters selected as "focus clusters" will depend on institutional capacity in the activation phase.
 - Select focus clusters.

Appendix C – Task Force Index Results

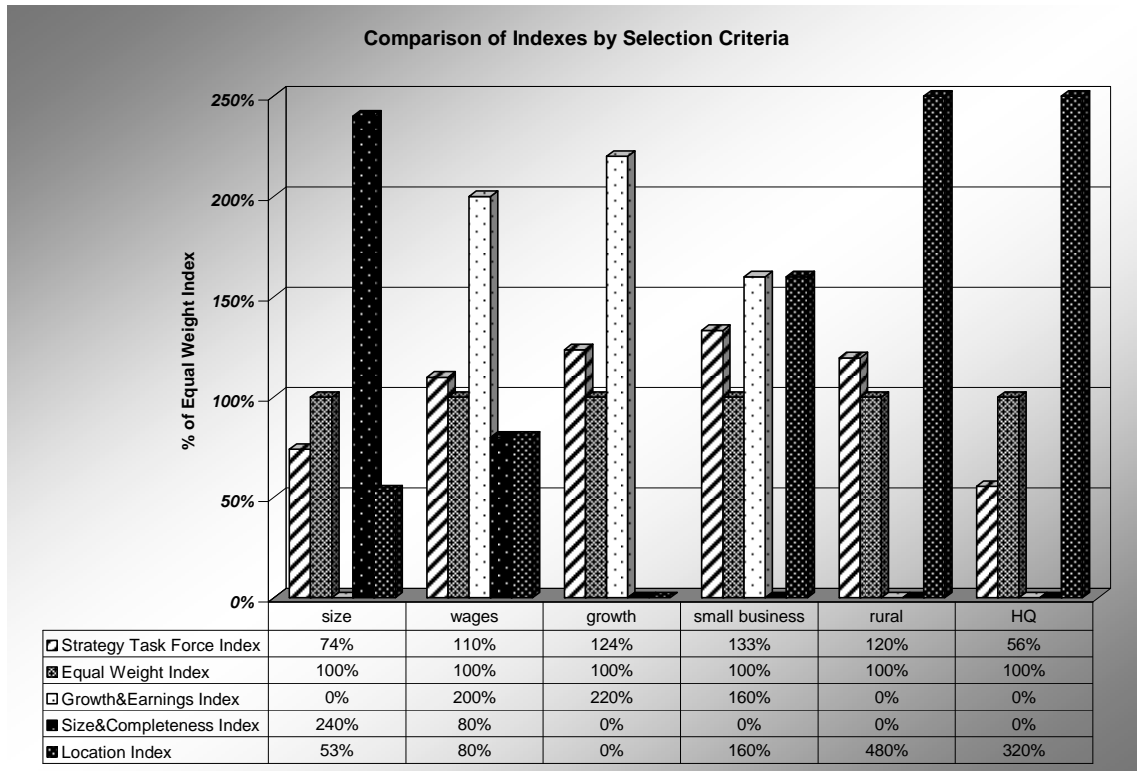
	CRITERIA	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	MAX	MIN	AVG	Weight
1	Weighted Location Quotient	8	9.5	0	0	25	5	3	2	8	5	3	15	10	5	2	3	0	25	0	6.09	6.1%
2	NC Location Quotient 2005	5	1	0	10	0	5	3	3	5	10	3	5	5	0	4	2	0	10	0	3.59	3.6%
3	NC Presence	6	9	0	10	0	5	8	3	2	5	3	1	5	0	3	2	0	10	0	3.65	3.6%
4	Regional Presence	6	8.5	0	0	10	10	8	5	2	0	10	7	6	8	5	5	0	10	0	5.32	5.3%
5	Regional Share of NC Cluster Emp	6	3	0	0	0	5	7	10	9	5	10	0	5	8	7	5	10	10	0	5.29	5.3%
6	Cluster Density	6	0	0	0	10	0	4	8	5	0	0	0	5	9	2	1	15	15	0	3.82	3.8%
7	% of NC Wage	9	8	0	5	0	20	8	5	5	10	0	3	7	8	8	10	0	20	0	6.24	6.2%
8	% of US Wage	7	7.5	0	5	20	10	7	10	3	0	12	7	6	8	5	10	10	20	0	7.50	7.5%
9	NC Growth, 2001-2005	4	2	0	5	0	5	8	10	8	10	0	3	9	5	8	5	0	10	0	4.82	4.8%
10	US Growth, 2001-2005	4	12.5	0	10	5	5	5	10	5	10	12	11	8	5	10	5	0	12.5	0	6.91	6.9%
11	US Projected Growth, 2014	10	11.5	30	15	10	30	5	5	8	5	15	3	10	7	10	7	20	30	3	11.85	11.9%
12	US Estab. Growth '01-'04	10	10.5	20	10	0	0	10	5	5	5	0	20	1	7	9	2	10	20	0	7.32	7.3%
13	% US Small Estab.	8	10	20	0	10	0	8	10	10	5	0	16	6	5	8	13	10	20	0	8.18	8.2%
14	% MSE	8	7	0	15	10	0	8	10	10	20	14	7	5	10	8	12	0	20	0	8.47	8.5%
15	% Rural	2	0	30	15	0	0	6	2	10	10	8	0	6	10	5	8	15	30	0	7.47	7.5%
16	% HQ	1	0	0	0	0	0	2	2	5	0	10	2	6	5	6	10	10	10	0	3.47	3.5%
	SUM (MUST equal 100!!)	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100				

Category	CRITERIA	Category	CRITERIA
size and completeness criteria	1 Weighted Location Quotient	growth criteria	9 NC Growth, 2001-2005
	2 NC Location Quotient 2005		10 US Growth, 2001-2005
	3 NC Presence		11 US Projected Growth, 2014
	4 Regional Presence		12 US Estab. Growth '01-'04
	5 Regional Share of NC Cluster Emp	small business	13 % US Small Estab.
	6 Cluster Density		14 % MSE
wage criteria	7 % of NC Wage	rural	15 % Rural
	8 % of US Wage	HQ	16 % HQ

Appendix D: Comparison of Indexes and Cluster Rankings



Note: Red shaded area represents an Equal Weight Index of all 6 criteria categories; vertical axis represents the weight of each category in percentage terms.



Note: Graph displays a comparison of Task Force and Consultants Indexes as a percentage of Equal Weight Index for each criterion

Table D1: Top Ten Clusters Derived by Each Index

	Task Force Index	Equal Weight Index	Size & Completeness	Growth & Earnings	Location Index
1	Architectural & engineering svc	Architectural & engineering svc	Pharmaceuticals (tech vc)	Technical & research svc	Concrete, brick building products
2	Technical & research svc	Pharmaceuticals (tech vc)	Pharmaceuticals (value chain)	Architectural & engineering svc	Medical instruments & optics
3	Basic health services	Technical & research svc	Basic health services	Basic health services	Nonresidential building products
4	Pharmaceuticals (tech vc)	Basic health services	Business svc	Pharmaceuticals (tech vc)	Pharmaceuticals (tech vc)
5	Information svc (tech vc)	Pharmaceuticals (value chain)	Information svc (tech vc)	Financial svc & insurance	Pharmaceuticals (value chain)
6	Higher education & hospitals	Information svc (tech vc)	Higher education & hospitals	Information svc (tech vc)	Metalworking & fabricated metal
7	Business svc	Higher education & hospitals	Financial svc & insurance	Business svc	Architectural & engineering svc
8	Financial svc & insurance	Business svc	Nonresidential building products	Aerospace (technology)	Motor vehicles (value chain)
9	Pharmaceuticals (value chain)	Financial svc & insurance	Architectural & engineering svc	Aerospace (value chain)	Technical & research svc
10	Information svc (value chain)	Nonresidential building products	Arts & media	Information svc (value chain)	Aerospace (value chain)

Table D2: Number of Similar Cluster, by Index

	Task Force Index	Equal Weight Index	Size & Completeness	Growth & Earnings	Location Index
1	Architectural & engineering svc	Architectural & engineering svc	Architectural & engineering svc	Architectural & engineering svc	Architectural & engineering svc
2	Basic health svc	Basic health svc	Basic health svc	Basic health svc	Pharmaceuticals (tech vc)
3	Business svc	Business svc	Business svc	Business svc	Pharmaceuticals (value chain)
4	Financial svc & insurance	Financial svc & insurance	Financial svc & insurance	Financial svc & insurance	Technical & research svc
5	Higher education & hospitals	Higher education & hospitals	Higher education & hospitals	Information svc (tech vc)	
6	Information svc (tech vc)	Information svc (tech vc)	Information svc (tech vc)	Information svc (value chain)	
7	Information svc (value chain)	Pharmaceuticals (tech vc)	Pharmaceuticals (tech vc)	Pharmaceuticals (tech vc)	
8	Pharmaceuticals (tech vc)	Pharmaceuticals (value chain)	Pharmaceuticals (value chain)	Technical & research svc	
9	Pharmaceuticals (value chain)	Technical & research svc			
10	Technical & research svc				
# similar clusters with Task Force Index	10	9	8	8	4