



Empowering collaborative networks of providers to increase health and well-being outcomes across populations with high deprivation. Starting dialogue around the mechanics of a network model in a health context and a brief example.

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Development Mechanics

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Introduction

There is a keen political rhetoric to provide a 'better, sooner, more convenient' primary health care system that has the results of producing a more personalised primary health care system, which makes kiwis healthier and reduces stress on the secondary and tertiary (hospital) system. This action strategically is a correct approach as various workforce and physical impending resource deficits require a stringent action to attempt to future proof the current health system. This move to develop the primary health care system must be seen as a vehicle to tackle those populations that are of most concern to District Health Boards at a regional and city level. This is especially the case with those populations who utilise resources which are not meant for that purpose and cause inefficiency at secondary and tertiary level. Simply put a primary system which serves well those populations in most need and most at risk will cause efficiency to increase up the system.

For Christchurch it is known through CDHB and PHO data that the primary system at present works well in certain suburbs and population areas. It is also clear from this data that in other population areas the opposite is the case. When you cross this data at a suburban population level with median income, ethnicity, and other deprivation indicators there is more than a suggestion of an inequitable and inefficient delivery of service where it is needed most.

So why is this? The CDHB and PHO understand this issue and look to fund programmes and initiatives which look to increase access to primary health care. Most of these take place in the form of services to improve this access. These services and initiatives which are both people and programmes, look to raise awareness and actually aid physical access to general practice, the primary point for primary health care.

It is of paramount importance in this development and talk of development that General Practice remains at the forefront of service delivery. The human and physical resource associated with the General Practice model is the most suitable basis for the reforms in these populations to take place, yet it must incorporate the allied and other clinical professionals associated to the practices and other organisations in these populations.

By facilitating this practice of utilising the expertise across the population being targeted, rather than unnecessarily duplicating service, the population will have a more efficient and equitable service that suits the population they are in.

The issues from this are placed succinctly in the comment below.

“Although individual agencies obviously have an important role to play in service delivery, and some agencies will clearly be more involved and provide higher quality services than others, if overall client well-being depends on receiving different services provided by multiple agencies, client outcomes should be explainable by focusing on network-level activities and structure. The critical issue, both for clients and system-level planners and funders, is the effectiveness of the entire network of service providers, not whether some agencies that are part of the network do a better job than others in providing a particular component of service.”

A Preliminary Theory of Interorganizational Network Effectiveness: A Comparative Study of Four Community Mental Health Systems Journal article by Keith G. Provan, H. Brinton Milward; *Administrative Science Quarterly*, Vol. 40, 1995

So thinking of networks and their success based on increasing client wellbeing must be seen in light of how well a network or functions overall across that defined population.

Creating the entity – A network

A network is difficult to create. Many suggested that networks must form together naturally and organically through like minded individuals who are connected by some affinity. When concerned with Primary health delivery it would be most likely that these networks would be defined through population area and area of interest, in this case, health, well being and development. It could be argued in the current funding environment that well being and development are not of paramount importance to the majority of Primary health care providers, and this Melee is often compounded in the communities where access and utilisation of primary health resources is more problematic; However networks can also be stimulated and sustained through external influence which encourages and supports the action.

Developing the Network

To enable cohesion of a network, the very thing that enables the network to function must be developed to support the network itself. That is, the way it is funded. Currently funding follows the enrolled individual at a certain General Practice. In a network situation it is logical that it would be appropriate for some funding, of some kind be reallocated to support the very thing that creates a strong and vibrant network, the links.

Model presentation and development

Below we have shown two types of hypothetical network models and developed a way of analysing the strength of these networks using simple network theory.

This process is very much an example of the methods of studying networks and how with the development of the approach on actual networks, strategic leverage can be applied to strengthen networks, highlight gaps and create dialogue on the strength of a more progressive and relationship based network.

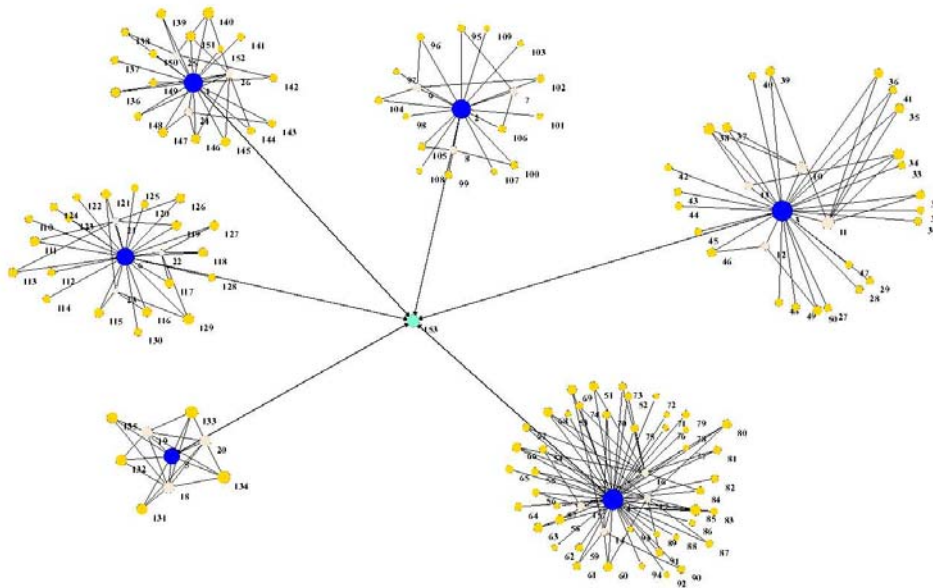


Fig 1.

Fig 1 above shows a simple diagram of a simple Health network scenario in a defined population area. In this scenario the yellow dots (nodes) represent enrolled individuals, the blue nodes are general practitioners, the white / pink nodes are other supporting health / clinical professionals, and the light blue node is the PHO (Primary health organisation) The different size in nodes represents the different amount of links each node has coming to it. The bigger the node the more 'linked' this node is with the network. In this particular network the amount of links coming to the enrolled individuals is important as this represents an increased contact with the primary health delivery mechanism. In Fig 1. The General practitioners are the largest group of connected individuals, they are the most important assets in this model. They are the primary point of contact for all the other nodes across the network. Some enrolled nodes are bigger than others and this would represent the varying health needs of enrolled individuals in each General Practice. What is clear in the diagram is the nature by which the network really is 6 separate networks or practices; these are only connected as a whole by their affiliation with a Primary Health Organisation. This is not a strong overall network for this population area. When we look at the other support health / clinical professionals it is clear that as far as being part of the wider network these professionals are only used by a particular general practice by the enrolled individuals at that place.

This diagram is problematic in trying to develop a strong network practice over a population as we are dealing with 6 separate networks which function more or less independently. There is not a large amount of links (the measurable strength of a network) and the other health / clinical professionals do not figure highly.

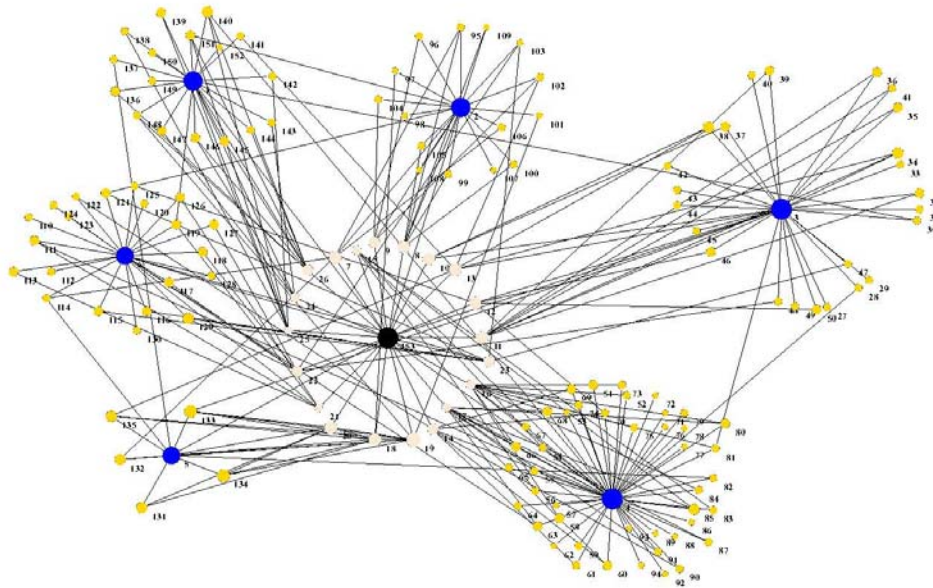


Fig 2.

Fig 2 shows and more fluid, more connected network. The strength of any network is the ability for the nodes to be connected to other nodes in that network. In this network the supporting clinical / health professionals are shared by the network, enrolled individuals utilise different general practices where the skill in a particular area is recognised. In this network the Pink nodes also become other NGO's and allied services, and the whole network is encouraged to refer and utilise the skills available to the network on a population scale. The network is co-ordinated by a network mechanism which is centrally located. The PHO is still functioning but is not included on the local population network as their role is seen in the network mechanism (this is to be developed more coherently) What can be noticed here is that this network stimulates more links and is a stronger more healthier network.

Three things are key to this network developing here.

1. The developing relationship that exists between the providers and professionals, and a breakdown of previous silo mentality.
2. The fluidity of service provision and so increasing health outcomes for the defined population
3. Funding tagged to this improvement and so strengthening through realistic incentives the outcome based notion for this model.

Analysis and comparison of networks

Node # / GP practices	Fig 1 Node In	Fig 1 Node out	Fig 1 clustering coefficient	Fig 2 Node in	Fig 2 Node out	Fig 2 Clustering Coefficient
1	20	11	0.04194	23	12	0.05126
2	18	3	0.0381	21	4	0.075
3	28	28	0.02435	31	29	0.03023
4	48	14	0.02062	52	12	0.02488
5	8	8	0.35	12	9	0.26429
6	10	21	0.0172	12	22	0.2228

Node in – The number of links that come into that particular node. Suggesting that, that particular node or entity in that network has links to it from other nodes or entities. In a service delivery network or in this case a health network ‘node in’ links can represent the amount of links a particular health professional or General Practice has or how much ‘care’ an enrolled individual is getting from that network.

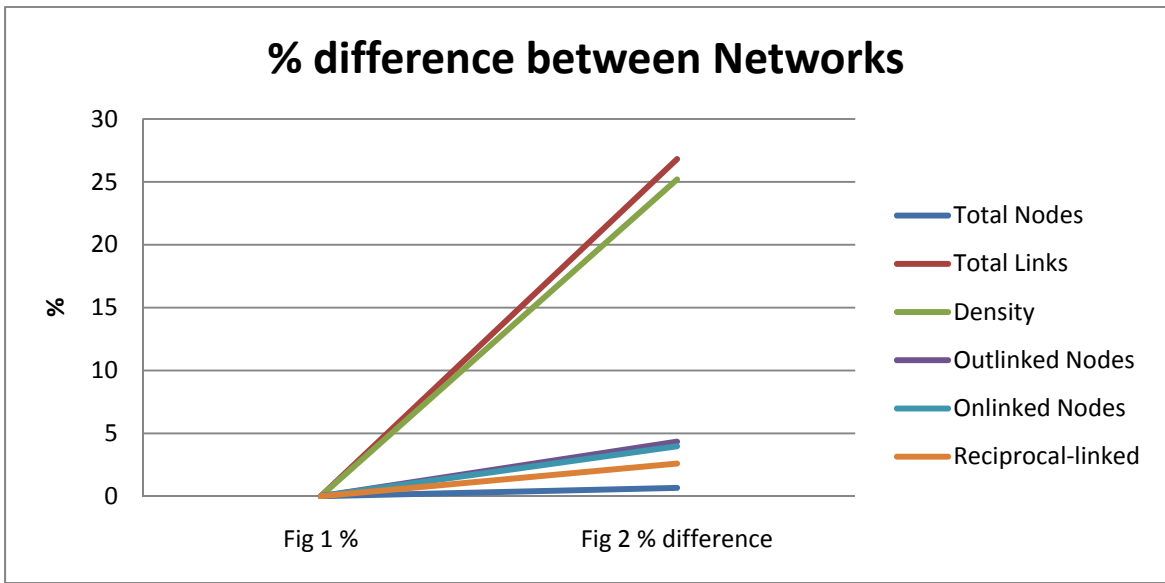
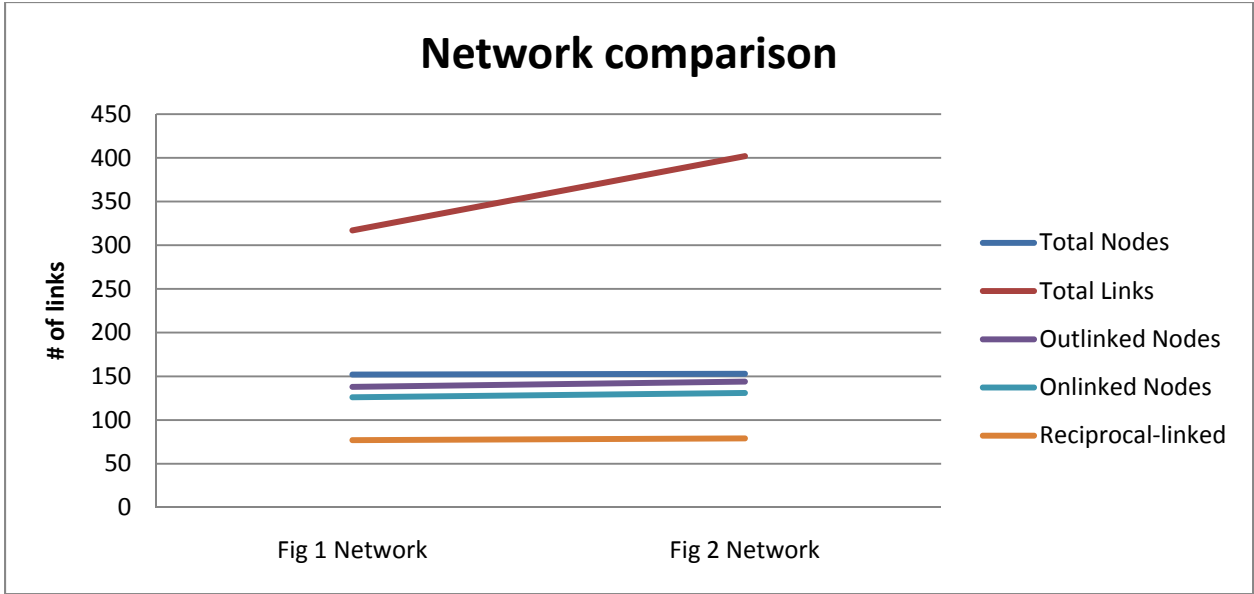
Node out –The number of links that come out from that particular node to another. The number of ‘node out’ links suggest how active that particular node or entity is in that network. In a health network model, one would want a General Practitioner or health professional to be as linked as possible with the rest of the network. From an enrolled individuals perspective the more node out links they have the more they are utilising the services on hand as part of this network.

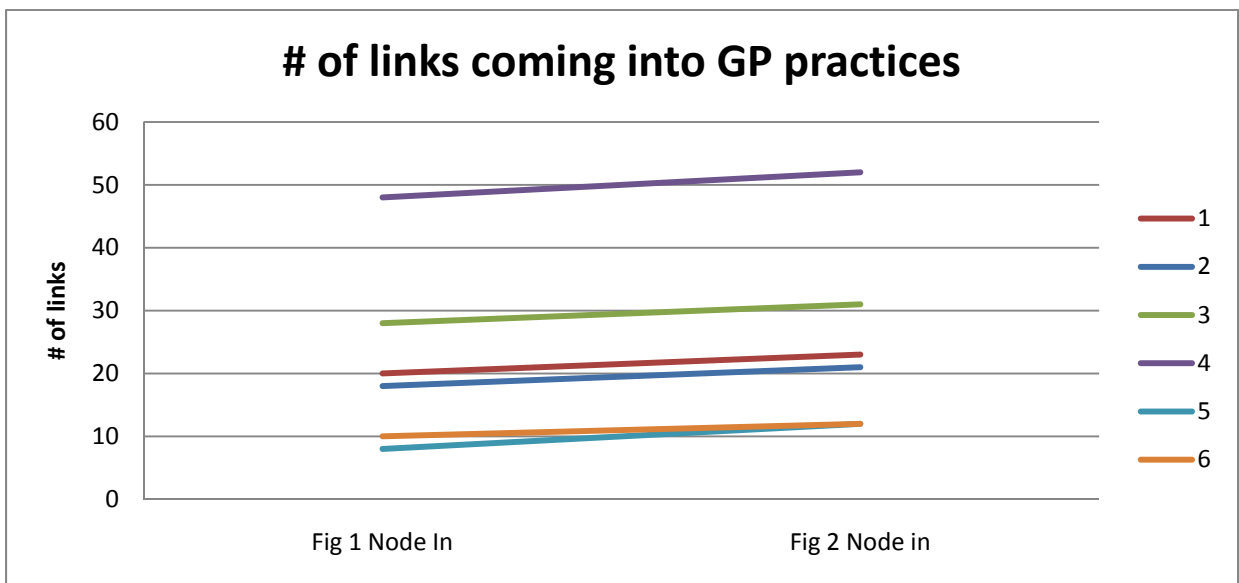
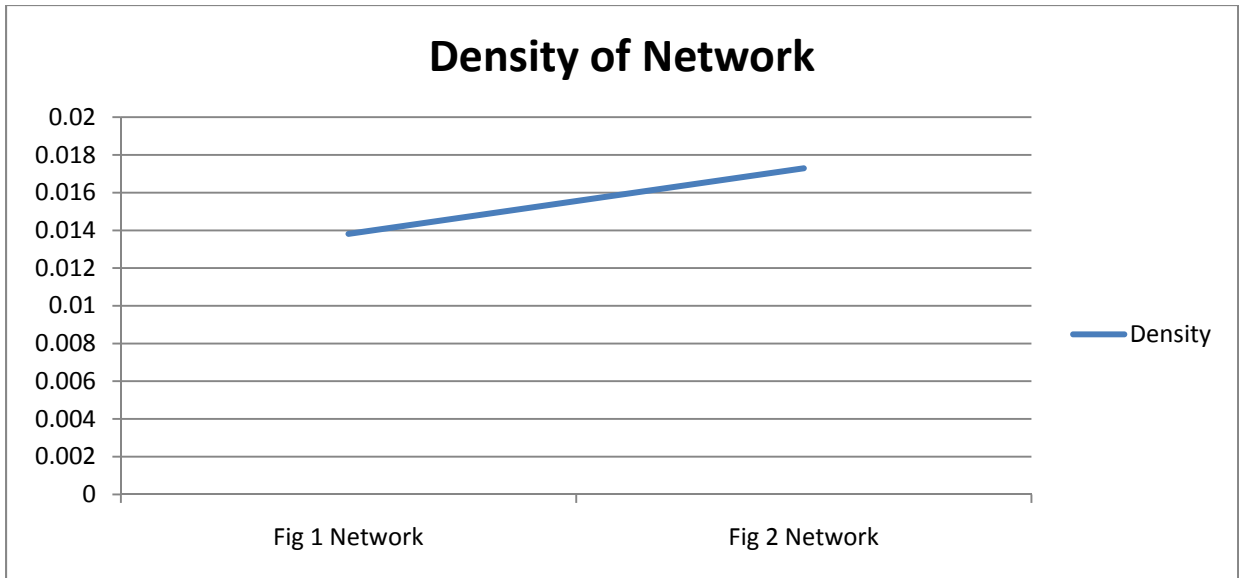
Reciprocal Links – The number of links that are reciprocated between nodes. Node in and Node out. This is a good indicator of developing relationship in a network between nodes.

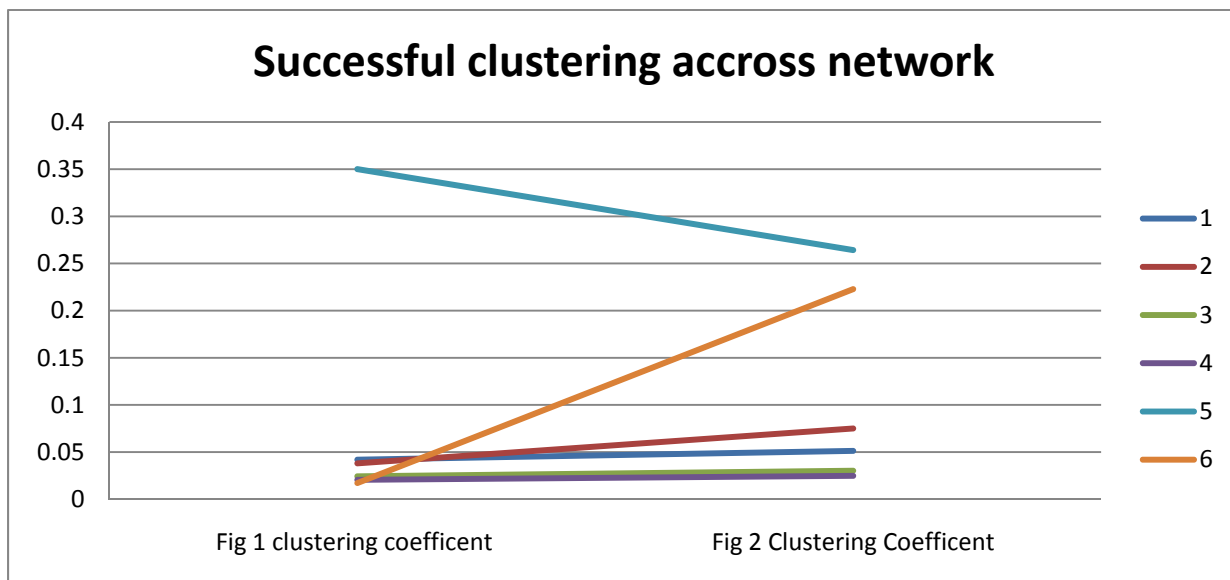
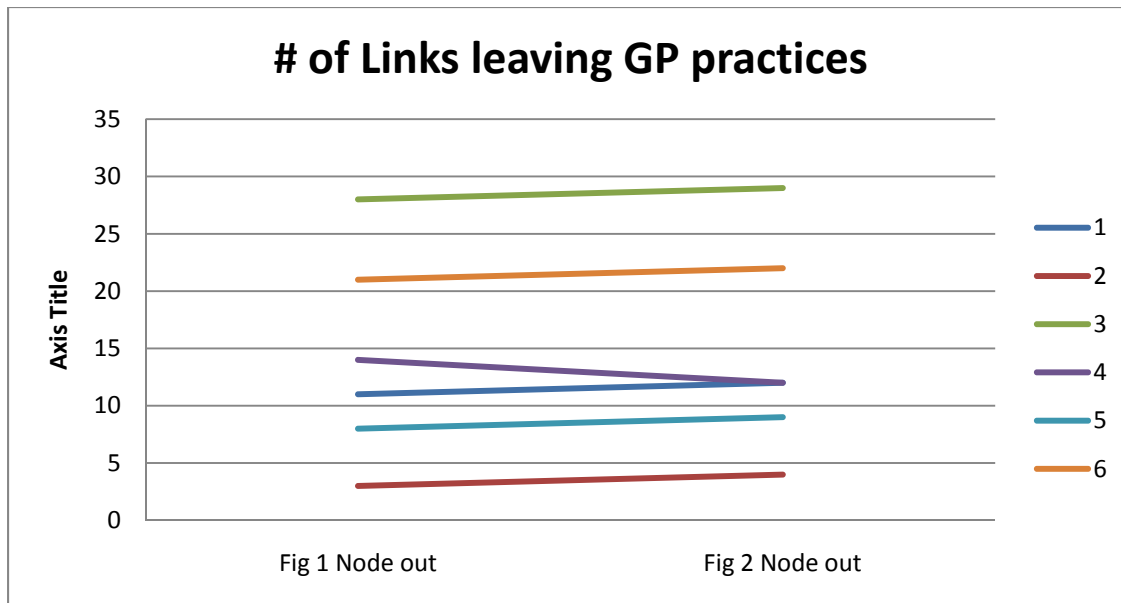
Clustering coefficient - The clustering coefficient quantifies how close the vertex and its neighbours are to being a clique. This is a one measure of a strength of a network as specific parts of the network cluster towards a clique. One would assume a clique in a particular network is a strength as long as the links to the rest of the network as strong and developing.

By comparing the two different networks in these areas you are able to begin dialogue around how the move to a local population health network or cluster can benefit not only the health indicators of a population but also the appease the business mentalities of some entities in the very network itself.

This can be seen in the simple graph analysis and comparison below.







In conclusion

As a draft document this document attempts to support the work of movement towards health clusters. It attempts to support this developmental work by looking at a model of measuring health networks for population outcomes whilst mitigating against 'industry' pressure that may well be present in a model which increases the involvement of other allied services.