Discussion Document:
Defining rurality within the context of health policy, planning, resourcing and service delivery:
Complexities, typologies and recommendations

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Discussion document:

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### Acronyms

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<th>Description</th>
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<tbody>
<tr>
<td>COGTA</td>
<td>Department of Co-operative Governance and Traditional Affairs</td>
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<tr>
<td>CSIR</td>
<td>Council for Scientific and Industrial Research</td>
</tr>
<tr>
<td>DBSA</td>
<td>Development Bank of South Africa</td>
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<tr>
<td>DoE</td>
<td>Department of Education</td>
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<tr>
<td>DoH</td>
<td>Department of Health</td>
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<td>DPLG</td>
<td>Department of Provincial and Local Government</td>
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<tr>
<td>DSD</td>
<td>Department of Social Development</td>
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<tr>
<td>DWA</td>
<td>Department of Water Affairs</td>
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<tr>
<td>EPWP</td>
<td>Expanded Public Works Programme</td>
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<td>EU</td>
<td>European Union</td>
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<tr>
<td>ISRDP</td>
<td>Integrated Sustainable Rural Development Strategy</td>
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<tr>
<td>MIIF</td>
<td>Municipal Infrastructure Investment Framework</td>
</tr>
<tr>
<td>OECD</td>
<td>Organisation for Economic Co-operation and Development</td>
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<tr>
<td>PHC</td>
<td>Primary Health Care</td>
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<tr>
<td>PHWSBC</td>
<td>Public Health and Welfare Sector Bargaining Council</td>
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<tr>
<td>RHAP</td>
<td>Rural Health Advocacy Project</td>
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<tr>
<td>RuDASA</td>
<td>Rural Doctors Association of Southern Africa</td>
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<td>SA</td>
<td>South Africa</td>
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<td>StatsSA</td>
<td>Statistics South Africa</td>
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<td>UFI</td>
<td>Urban Function Index</td>
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<td>UN</td>
<td>United Nations</td>
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<tr>
<td>USA</td>
<td>United States of America</td>
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<td>WCRH</td>
<td>Wits Centre for Rural Health</td>
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<td>WHO</td>
<td>World Health Organisation</td>
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<td>Wits</td>
<td>University of the Witwatersrand</td>
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Summary and Recommendations

Section 27 of South Africa’s Constitution (1996) affords everyone who lives in the country the “right to have access to health care services, including reproductive health care”. The constitution also gives the state the responsibility for taking reasonable legislative and other measures, within available resources, to progressively realise this right.

Poor infrastructure, a shortage of critical health care personnel and the unreliable supply of basic medicines continue to prevent nearly 40% of South Africa’s population who live in rural areas from having full access to good quality health care.

The South African government is not unaware of the many challenges facing the health system. It is currently undertaking a number of reforms (under the banner of the National Health Insurance (NHI) and PHC re-engineering) that are aimed at improving access to quality health care for all. These reforms will, however, only benefit rural communities if factors such as geographic inaccessibility, under resourcing and systemic neglect that continue to characterise the rural health context are not explicitly targeted in health policy, planning, resourcing and service delivery.

Targeted policy and resourcing will only be possible if rural is clearly defined and if this definition has practical utility for policy development and implementation. An examination of the evidence from abroad has demonstrated that due to vast contextual diversity within rural settings themselves the exercise of identifying a single definition of rural is impossible in practice and has no practical benefit. Instead, most commentators have argued for the development of definitions of rural that emerge out of the questions they are trying to answer. In other words, the definition of rural should depend largely on what it will be used for in practice.

In some sectors this is an approach taken in South Africa. There is currently no single definition of rural used in government policy. Instead there are a number of examples of where government departments and agencies have developed definitions and typologies, with varying degrees of success, that are meant to be used in the design, resourcing and implementation of targeted rural policy interventions.

Rural typologies developed by the Centre for Scientific and Industrial Research, Department of Water Affairs, and the Department of Social Development are all good examples that have important policy implications for rural service delivery. Unfortunately some of the government’s largest departments, such as Health and Education, have been reluctant to take such an approach and have preferred to treat rural as underserved and deprived.

While there is certainly a need for a focus on underserved and deprived in policy, this does not allow for policy that effectively deals with the rural service delivery environment. With regard to health the following factors all prove to be significant barriers in rural contexts:

- Geographic accessibility: high average distances to facilities and a lack of/expensive transport to and from facilities.
- Availability of healthcare: inequitable distribution of healthcare workers between rural and urban areas and a shortage of health care facilities and supporting infrastructure such as roads, piped water and electricity.
- Acceptability: services are often not of an acceptable quality or acceptable based on social and cultural norms of the people accessing them.
• Financial accessibility: Socio-economic disadvantage of rural populations, additional and higher costs in seeking care, and lower levels of health insurance.

If health is going to implement reforms and policies that are aimed at improving access to care and equity in the resourcing of health care, under the banner of the NHI for example, it is imperative that it develops rural typologies that will guide the development of policy, strategic planning, resourcing and service delivery that effectively target rural need. For this to work to be taken forward a consensus approach must be used to ensure buy-in and ownership of the process by all stakeholders, particularly the Department of Health.

Practically this would require that:

1. The argument is made that there is value in embarking on a process of developing rural health definitions, typologies and/or indices. This approach should be based on evidence that can demonstrate the equity and efficiency gains of taking this work forward into the policy process.
2. The purpose of definitions and typologies of rural must be clearly defined. The purpose may only be for HRH and Budgeting or for a broader set of activities and services; but this must be established.
3. Factors/variables that can be used as measures of rurality (e.g. population density, distance, deprivation) must be identified. These factors should be meaningful, valid, quantifiable, replicable and derived from high quality data.
4. Typologies should then be developed, tested and refined. They should be simple enough to implement that they do not add unnecessary complexity to policy and resourcing processes.
5. Their use should be promoted and monitored. There is no use in defining rural and developing typologies if they are not put into action.
1. Introduction

The Rural Health Advocacy Project was established in 2009 as a partnership initiative between the Rural Doctors Association of Southern Africa (RuDASA), SECTION27 (then AIDS Law Project) and Wits Centre for Rural Health (WCRH). It was established to coordinate and lead on advocacy for rural health, offering a safe place for rural health care providers to channel problems relating to health care delivery to stakeholders and decision-makers, and to influence policy processes to ensure they speak to the rural context.

The RHAP’s aim is to advocate for the constitutional right of rural and remote communities to have equitable access to comprehensive, quality health care. Central to RHAP’s work is its vision “Rural Health – Key to a Healthy Nation” and the unwavering belief that South Africa can only have a healthy nation if rural health is central to health service planning and decision-making at both national and decentralised levels. Inline with RHAP’s mission of “Connecting Practice, Policy and Partners”, the Project aims to be a leading resource in the field of rural health advocacy that facilitates the translation of rural health needs and health care solutions into policy and decision-making.

The RHAP has defined the following four strategic objectives (programmes) to facilitate self-advocacy, generate debate, monitor implementation of health policies in rural areas and influence pro-equity decision making which is in line with local rural realities:

1. Ensuring new and existing policy are rural-friendly.
2. Ensuring rural health care receives the financial resources to provide a quality, equitable service to rural citizens.
3. Ensuring every rural citizen has adequate access to caring, qualified health care teams (human resources for health).
4. Ensuring policies are implemented in effective and efficient rural health care systems.

The RHAP’s approach to achieving these objectives depends heavily on the quality of evidence we generate on key rural policy, financing, human resourcing and implementation issues depend heavily on. The evidence we generate through research activities underpins all our advocacy efforts.

A significant gap in the evidence and research on rural health is that there is currently no clear or common definition of what is rural. In most of this research the definition of rural is amorphous and it is often taken for granted that its meaning is commonly understood. It has, however, become increasingly apparent that there is no clear and common understanding of what exactly it is that we are referring to when we refer to ‘rural’.

The lack of definition has been particularly problematic for much of the RHAP’s technical research where analysis, findings and recommendations often rely on a clear operational definition. Determining rural staffing or financing needs, for example, would require a definition that includes inclusionary and exclusionary factors and variables. There is currently no definition used in our work that does this satisfactorily.

The purpose of this discussion document is to unpack issues with arriving at a single definition of rural and to attempt to identify whether or not it is possible to come to a common definition of rural; if so what would this be and if not what would the basis be for ‘fit-for-purpose’ definitions in research and advocacy.
Rural communities and the right to health

Rural communities have been estimated to make up approximately 38% of South Africa’s population (World Bank, 2012). As with all people who live in South Africa these communities have a right to the progressive realisation of full access to quality, comprehensive health care under Section 27 of the South African Constitution (1996).

Yet in reality, the public health care system in rural areas is often under-resourced and access to quality healthcare is severely limited for many living in these often marginalised communities.

Without a concerted effort to identify health system reforms that will improve access to quality health care through targeted interventions, the progressive realisation of the right to health for all who live in South Africa can never be fully achieved.

Health Care Reform in South Africa and opportunities for rural health

The South African Health System is currently undergoing a process of reform under the banners of the National Health Insurance and Primary Health Care Re-engineering. These reforms are aimed at strengthening the health system in ways that improve access to quality care, particularly PHC, for the country’s most vulnerable people.

The Primary Health Care (PHC) approach and strengthening of the district health system have been identified as important strategies for achieving the vision of health for all. According to the National Department of Health these aim to provide:

“…a comprehensive range of promotive, preventive, curative, rehabilitative and palliative health activities, which are accessible to individuals and families in the community through their full participation and at a cost that the community and country can afford. It involves, in addition to the health sector, all related sectors and demand the coordinated efforts of all those sectors.”

The strengthening of the District Health System and PHC re-engineering are intimately linked and if implemented properly have the potential to significantly improve access to care for rural communities.

The strengthening of the District Health System through better planning and administration should allow for more nuanced approaches to planning, resourcing and delivery of services in rural contexts. Well-functioning district health systems are more responsive to the needs of the people they serve.

The introduction of ward-based outreach teams, school health services and district specialist teams as the three core streams of PHC re-engineering have the potential to significantly improve access based on better models of delivery that, again, if developed properly could have great benefit for rural people.

The extent to which the strengthening of the District Health System and PHC re-engineering can and will improve access to quality care for rural communities in no small way depends on what rural is understood to mean. This means that we need to understand
what are the key factors that constitute rural and how do we plan for the resourcing and delivery of services with these factors in mind.

2. Why do we need a definition of ‘rural’? ¹

Do we need to worry about how ‘rural’ is defined? The answer is a resounding ‘yes’, as the categorising of an area as ‘rural’ has far-reaching implications, both in terms of money being spent, and wellbeing of rural populations. Hart et al (2005: 1149), for example, argue that:

“Definitions of rural are the basis for targeting resources to underserved rural populations….. (If the definitions can be clarified), we would have an improved mechanism for funnelling health care to where it is needed most.”

Coburn et al (2007: 2) have observed that, “The choice of rural definition affects who benefits from a policy and who does not”. In addition, inappropriate definitions of rural may create undesirable biases in allocations.

Vermaak (2006) has noted that as the size and composition of rural populations vary markedly depending on the definition of rural used, the perceived magnitude of rural health problems and the impact of any change in policy depends on how rural is defined.

We need definitions for the purposes of planning, resource allocation, implementation and monitoring and evaluation of development and service delivery programmes. Appropriate classification of rural areas is an essential underpinning of successful policies and service delivery for these areas.

Is ‘rural’ everything that is not urban?

Often the default definition of rural is to not give any definition at all and imply that it is anything that is not urban. Worldwide, greater priority has been given to developing quantitative definitions of urban for census, economic and infrastructural development purposes. Broadly, defining the parameters of urban involves (i) tracing the boundaries of a built up area, (ii) defining population density thresholds and (iii) determining functional usage of space (commerce, industry or residential) in relation to the previous two elements (Scott et al., 2007). Anything that does not fit within the defined thresholds of these urban categories, such as population density, has been ‘defined’ as rural. As one American commentator has put it, the problem with defining rural as anything that is not urban results in rural areas being treated like “small urban environments” (Calico, 2000).

Unfortunately, this has resulted in a deficit model where rural is considered to be residual, or what is left over when the urban areas have been identified rather than as a model of assessment in its own right. It is a way of defining rural through omission, which often results in the neglect of rural settings in policy, planning, and the allocation of resources.

This also results in a dichotomous definition of urban and rural, meaning that an area is either urban or rural, and that urban is never rural and vice versa, that is, they are non-overlapping. It does not allow for definitions that include dynamic relationships between urban and rural or those grey areas where a setting is both urban and rural at once (Scott et al., 2007).

¹ The following discussion draws on and summarises the work of Schmidt, 2012, available at www.rhap.org.za
Finally, defining rural as non-urban fails to account for the complexity and diversity in rural; it does not allow for various categories of rural. It also does not account for those elements that are shared with urban nor does it account for those elements that are uniquely rural.

What makes rural different?

That said, amongst all the diversity that shapes the rural landscape globally there are certain underlying characteristics that are, to varying degrees, common to most rural settings. Some key socio-economic elements include the following:

- Rural areas tend to have low population densities with greater average distances to travel to access basic social services such as health and education (Hart et al., 2005);
- Rural populations also tend to have a disproportionate number of elderly people and children, which results in high dependency ratios as well as high demand for basic social services (ibid);
- Rural populations, when compared to their urban counterparts, tend be poor. According to the United Nations’ Rural Poverty Report 2011 (2012:16), despite some progress in lifting rural people out of poverty over the last few decades, at least 70% of people living on less than US$ 1.25 live in rural settings;
- Rural populations tend to depend more heavily on agriculture and the use of natural resources for their livelihoods; and
- Rural populations tend to have unequal access to health care, education, electricity, water, adequate nutrition and the economic opportunities necessary to overcome their material deprivation and provide them with the opportunities to realize their full human potential (OECD, 2010).

Beyond quantifiable socioeconomic variables some research has also argued that rural areas are also shaped by more ethnically and culturally homogeneous populations that tend to be more cohesive (Scott, et al., 2007).

Why a definition of ‘rural’ and not ‘underserved’?

While it is unfortunately clear that one of the defining features of rural, particularly in the developing world, is less access to social and economic services and higher levels of deprivation, many of these factors are not unique to rural settings. For policy and resource allocation processes one could argue that instead of defining rural, a definition of ‘underserved’ and ‘deprived’ would be more appropriate. Many policy makers have been reluctant to make the distinction between rural and underserved/deprived areas in the development of policy and the allocation of resources out of the belief that this may result in privileging one setting in great need over another setting in great need.

While rural areas would certainly benefit from simply being classified as ‘underserved’ or ‘deprived’, doing so would not allow policy makers and administrators to consider the numerous contextual factors, discussed earlier that are unique to rural settings (Asthana et al, 2003).
All this is not to say that we need to privilege rural over urban ‘underserved’ or ‘deprived’, but rather that the ways in which we approach interventions aimed at overcoming barriers to access need to be formulated differently based on context.

**Do we need more than one definition of ‘rural’?**

One of the issues with defining rural based on characteristics of the rural context is that within rural we find that there is a great deal of diversity in what is explicitly and implicitly described as rural. Although many people would prefer one standardized all-purpose definition of what ‘rural’ means, it is a multifaceted concept. There is no single, universally preferred definition of rural that serves all purposes.

In the United States, for example, there are currently more than two dozen definitions that are being used by federal agencies in policy, planning, resourcing and the delivery of services (Bucholtz, 2008). Each definition varies depending on relative priority given to factors relating to administrative boundaries (counties), land use (agriculture, tourism, commerce, residential, etc.), economic activity (agriculture, tourism, commerce, etc.), population size and population density.

In many ways defining rural depends on what the definition will be used for or the operational utility of the definition. As Newby (1986: 209) argued nearly 30 years ago ‘there is now . . . a general awareness that what constitutes ‘rural’ is wholly a matter of convenience and that arid and abstract definitional exercises are of little utility’.

In essence, how we define rural depends on the utility of that definition and the impact the inclusionary or exclusionary criteria will have on service delivery and access. As Corburn et al. (2007: 2) have argued:

> “Rural definitions can result in different outcomes from those intended when target areas have not been carefully specified, data used to conceptualise the rural definition are unavailable, or consequences of applying the chosen rural definition are not fully considered”

With respect to the need for multiple definitions and utility Hart et al. (2005) point out that, the more there is aggregation of different types of rural areas, the less localised health care and delivery problems can be pinpointed. When deciding on which rural definition to apply, the purpose for which the definition will be used, the availability of data, and the appropriateness of the definition must be considered.

There are some drawbacks in having multiple definitions. For example, the lack of standardization of definitions means that data and statistics generated by one department or organisation cannot be compared with those from another, if they have not used the same definition. This makes the integrated tracking of development and progress difficult.

**What makes rural health different?**

The relationship between poverty, poor health and healthcare outcomes has been well established; not only do poor people experience higher burdens of disease because of various social determinants, they also have less access to care (Peters et al., 2008). Research continues to show that this is particularly acute for rural populations, which tend to carry a disproportionate burden of both communicable and non-communicable diseases and across almost all indicators experience worse health outcomes (Smith et al., 2008)
There is good evidence that increasing rurality results in concurrent declines in health status and outcomes (Humphreys, 2009). Epidemiological data has revealed that on key health indicators such as Child Mortality (Murray, 1997), Maternal Mortality (Ronsmans and Graham, 2006), Tuberculosis (Abubakar, 2008, Moore et al, 2007), HIV/AIDS (Foster and Fraizer, 2008) and increasingly non-communicable diseases such as diabetes (Pampalon et al, 2006 and Dabney and Gosschlik, 2003) circulatory diseases (Bove et al, 2011 and Miruta and Bollman, 2003) and cancer, rural areas perform poorly when compared to their urban counterparts (Smith et al, 2008).

There are a number of characteristics common to most rural health contexts that play a significant role in limiting access to health care services (Peters et al, 2008 and Kenny et al., 2013). These include:

- Geographic accessibility: lack of transport to and from facilities.
- Availability of healthcare: inequitable distribution of healthcare workers between rural and urban areas.
- Acceptability: services are often not of an acceptable quality or acceptable based on social and cultural norms of the people accessing them.
- Financial accessibility: Socioeconomic disadvantage of rural populations, additional and higher costs in seeking care, and lower levers of health insurance, which often means that rural people often can not afford to access care at all.

Geographic access to health care—both the availability of and distance to—is amongst the most significant barriers to care rural communities face (Smith, 2001). In both developing and developed nations health care infrastructure, including both facilities and equipment, tend to be concentrated in urban centres.

One of the difficulties in ensuring that there is greater availability of health infrastructure in rural areas is that communities tend to be small and dispersed across large geographical spaces. This means that the cost of providing infrastructure and services closer to these communities has made it difficult for governments to improve access through availability (Asthana et al, 2003). Low population densities negate the benefits urban facilities get from economies of scale (Hale, 1996). Supply chain, transport, and ambulatory costs are also far higher in rural areas due to both distance and difficult topography (Diderichsen, 2004).

Difficulties associated with the lack of health infrastructure near to rural communities is then compounded by the fact that rural health care users often do not have access to the means necessary to overcome this barrier (Russel et al, 2013). In addition to the fact that transport infrastructure in rural areas is limited and of a poor quality (even in developed nations such as the United states (Mattson, 2010), the fact that many rural people are economically disadvantaged has meant that the cost of transport itself makes accessing care unaffordable (Harris et al, 2011).

Table 1 shows some similarities between underserved areas, whether rural or urban, and some specific rural characteristics, within the context of health care in South Africa (Harris et al, 2001, Goudge et al, 2009, Padarath et al, 2003, Stuckler et al, 2011 and Meents and Boyles, 2010):
Table 1: Differentiating between underserved and rural

<table>
<thead>
<tr>
<th>Problems shared by underserved and rural areas</th>
<th>Problems specific to rural areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>• High levels of poverty and deprivation making populations more vulnerable to disease and injury and less access to nutrition and education (social determinants)</td>
<td>• Cost and time for patients travelling long distances to access services is more significant for rural people</td>
</tr>
<tr>
<td>• Greater burden of disease than middle-high income urban settings</td>
<td>• Cost and time of conducting outreach services, and the resulting need for more HCWs per capita compared to urban areas.</td>
</tr>
<tr>
<td>• Health systems that are underfunded and poorly managed</td>
<td>• Lower economies of scale making cost of delivering services per capita higher</td>
</tr>
<tr>
<td>• Lack of drugs, equipment and Human resources within the health system</td>
<td>• Ambulances take longer to reach patients</td>
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<tr>
<td></td>
<td>• Health care workers may be reluctant to live in the rural areas as these are often far from desirable amenities (schools, banks, malls, gyms etc). Also fewer opportunities for employment of other family members e.g. spouse</td>
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3. Defining rural and typologies of ‘rural’: evidence from abroad

While the ‘rural is everything is not urban’ categorisation remains a popular and convenient way of defining rural, policy makers and administrators are becoming increasingly aware of the limitations of this approach for targeted and effective policy and service delivery interventions. As we have already argued, a definition of rural shapes who will benefit from an intervention and how they will benefit. So, if for no other reason, developing a definition of rural has become an important public administration exercise to improve prioritisation and the effectiveness and efficiency of service delivery. It is for this reason that the development of rural typologies has continued to be an area of focus globally.

What factors have been considered when developing typologies of rural?

The fact that it is difficult to identify a single standardised definition of rural and that this exercise may, in fact, not be very useful, does not mean that we cannot delineate factors that could and often should be included in rural typologies.

The European Network for Rural Development has developed a framework to assist with the identification of suitable factors that can be used in the development of new rural typologies (ENRD, 2010). This framework is based on a review of typologies currently in use and the factors most commonly used. Their review reveals that at least one or more of the following factors are used in developing rural typologies:

1. Population density: rural populations tend to have lower population densities than urban populations and are often more dispersed.
2. Demographic factors: fertility, age, sex, morbidity and mortality profiles of communities often differ between rural and urban settings.
3. Economic factors: rural populations tend to be poorer and have less access to economic opportunities than their urban counterparts. Economic activity in rural
areas is based around labour on farms and mines, subsistence farming and informal sectors.
4. Settlement patterns: rural settlements tend to consist of small towns, villages and dispersed homesteads.
5. Land use: rural land tends to be used for agriculture, tourism and industry such as forestry and mining while urban land is used for manufacturing, commerce, and retail.
6. Access to services: rural communities globally tend to have less access to basic services such as healthcare, education, water and sanitation.
7. Migration patterns and linkages: rural (and urban) populations are not static. People migrate from and to rural areas. These migration patterns are often circular with people leaving at particular times (e.g. for employment) and returning at others (e.g. to retire or when they become ill). Migration then also creates and sustains urban and rural areas and these are increasingly being investigated in terms of systems and networks. Linkages between people, goods, money and information are seen as important in understanding the dynamic nature of rural.

Few, if any, of the typologies of rural used internationally include all these factors and some may even use additional factors that are not included in the list. In fact, definitions tend to differ quite widely based on the social and political context in which they are being developed and the purpose for their development. Below are some examples of different approaches being used at the country or regional level to define rural that include factors listed earlier.

**Brazil and Mexico:** These countries started with a definition of ‘rural’ based on the size of the population and agriculture as the main economic activity. They moved to a definition of integrated spaces that recognises rural-urban linkages. Their definitions include those of rural, urban local, urban regional, and urban metropolitan. This is regarded as one of the factors that enabled them to make significant progress in the field of rural development (Garcia 2009).

**The United States of America (USA):** The US has a number of definitions, such as counties being designated as metropolitan or non-metropolitan. This has been refined in that ‘metropolitan’ counties have been grouped into 2 categories depending on size of urban population. Non-metropolitan counties are grouped into 7 categories based on size of largest city in county, and adjacency / non-adjacency to a metropolitan county. They have also used zip code areas and census geography to delineate geographic units (Coburn et al, 2007).

**The European Union (EU):** There are 3 official definitions of ‘rural’ currently being used in the EU (European Citizens Panel, 2007).

The Organisation for Economic Co-operation and Development (OECD) definition for what regions in Europe are ‘rural’ has 3 different categories: Predominantly rural, intermediate rural, and predominantly urban, according to the proportion of the region’s population that live in municipalities which have less that 150 inhabitants per square kilometre.

The European Council defines rural not by population, but by use of land for agriculture, forestry, fish farms, the economic and cultural activities of inhabitants and similar criteria.
The European Commission takes into account the degree of urbanisation and population density, and recognises densely populated areas, intermediate areas and sparsely populated areas.

United Nations (UN) organisations use definitions based on a rural and urban dichotomy. The Population Development Unit follows the definitions used when drawing up their various World Urbanization Prospects reports. Their focus is largely on the urban rather than the rural context and rural is therefore defined as ‘not urban’.

World Health Organisation (WHO): In 2010, the WHO published a document outlining how to increase access to health workers in remote and rural areas (WHO, 2010). In this document they make the distinction between remote and rural, and underserved. They fall-back on the dichotomy, stating that for the purposes of the recommendations, ‘rural areas’ are areas that are not urban in nature, and that an urban area usually incorporates the population in a city or town plus that in the suburban area lying outside but adjacent to the city boundaries.

4. Health specific definitions of rural: examples from abroad

The formulation of rural typologies at the regional and national level, while broadly important exercises, has been found to be inadequate in meeting sector specific definitional needs and uses (Corburn, 2007). A review of definitions of rural for health care internationally, for example, found that departments of health will often adjust broader typologies to fit health specific policy purposes. It is often necessary for these departments to select health specific factors—such as utilisation, burden of disease and unmet need—that are most appropriate and relevant for the department, policy or intervention and combine them with factors such as population density and socioeconomic status to develop operational definitions for health (Humphreys, 1998).

These operational definitions of rural used in health, often referred to as rural health indices, have become increasingly popular internationally because they offer a technically rigorous approach to fostering both efficiency and equity in health system planning and the allocation of resources (Humphreys, 1998).

While the list of factors that are used as measures of rural in various indices can be fairly extensive, these factors can be grouped into four broad categories (Humphreys, 1998; McGrail and Humphreys, 2009 and Penno et al., 2013). These are:

1. Measures of health need: measures of need can include utilization, clinical, and epidemiological measures as well as demographic measures that act as proxies for need at the population level such as age, sex and socioeconomic status.
2. Measures of geographical remoteness: remoteness can include measures such as average distance and travel time to various levels of care for defined communities as well as average distance for inter-facility transfers.
3. Population measures: these measures can include both the size of a designated population and the population density of a particular area.
4. Some measure of specific circumstances that affect particular communities: these measures are usually based on policy decisions to focus on historically neglected
groups (based on race, ethnicity and gender) that may contain high levels of unmet need.

In addition to these population level measures some indices include measures that account for variations in service delivery costs between urban and rural settings associated with the effects of diseconomies of scale (it is more expensive to deliver services to sparsely populated communities where utilization may be low but infrastructural requirements do not differ), governance costs and additional supply chain costs due to longer distances.

There are several examples from both developed and developing countries, where factors from one or a combination of these categories are being used for the purposes of planning and resource allocation.

**United States:** In the United States, rural hospitals (further than 35 miles away from another hospital, or 15 miles in the case of mountainous terrain) can choose to be classified as “critical access hospitals”. This allows for extra funding from the government Medicare health-financing scheme, dependent on community needs (Hart *et al.*, 2002).

**Australia:** In the state of New South Wales (NSW) rurality is included as a factor in both the need and cost components of the Department of Health’s Resource Distribution Formula (RDF). As part of the Health Need Index—which also includes factors such as standardised mortality ratios, socioeconomic status and population characteristics (e.g. %indigenous population)—rurality is factored in using the Accessibility/Remoteness Index of Australia (ARIA). The ARIA scores population localities (where people are coming from) based on the road distance to four categories of service centres (where they access services). The mean road distance for each of the service categories are then combined and a remoteness index ranging between 0 and 12 is determined for each population localities. A score of 0 is considered urban/city and 12 is most remote (NSW, 2005).

In addition to being included in the need component of the formula, rurality is included in the relative cost component as dispersion and small hospital cost factors. The dispersion cost factor is determined by calculating distance-weighted population units for key cost items including: cost of long distance telephone calls; travel in connection with the delivery of services; freighting of goods over long distances; and the cost of compensating staff for working in remote areas. These distance-weighted population units for each cost item are then converted into an index of relative dispersion for each AHS and used to weight allocations for various programme areas (NSW, 2005).

In addition to the dispersion index a small hospital factor, as a fixed cost component, has been included in the RDF to account for additional facilities need to deliver services in rural areas at the same levels as urban areas. The assumption here is that due to low population densities and larger distances to facilities, more facilities are needed in rural areas than urban areas to ensure adequate service provision. To avoid double counting, costs associated with the dispersion index are excluded (NSW, 2005).

**New Zealand:** In its Population Based Funding Formula, New Zealand’s Department of Health includes a Rural Index as a cost adjuster when calculating allocations to its
various District Health Boards (DHB). This ‘rural adjuster’ is meant to cater for higher costs associated with providing services to rural communities. It is important to note that there is no standard definition of rural used in the adjuster and factors used have either been modelled based on diseconomies of scale across DHBs or based on additional costs incurred due to remoteness (Penno et al, 2012). There are seven components used in the rural adjuster:

I. **Inter-hospital transfers**: this factor is used to compensate rural DHBs based on longer traveling times and distances involved in transfers between facilities, particularly from primary care to tertiary services.

II. **Community services**: this factor caters for greater average distances and longer traveling times for health care professionals who visit patients in their homes or do community outreach. This factor uses DHB total population and DHB population density to adjust the cost of providing community services.

III. **Small hospital facilities**: this factors in diseconomies of scale at rural facilities by classifying hospitals based on their Case Weighted.

IV. **Governance costs**: here fixed DHB governance costs are considered to produce a diseconomy of scale for smaller DHBs. A standard core governance cost for all DHBs was derived and used to estimate a national average governance cost per person. Each DHBs population is then multiplied by the average cost. Where the calculated cost based on the average per person differs from the DHBs reported costs the difference is funded by the Governance Cost Component.

V. **Offshore Islands**: DHBs that provide services to offshore islands receive an additional allocation based the difference between the national average cost of providing community services and the per person cost of providing services on offshore islands.

VI. **Rural GP costs**: Rural GP practices receive additional funding based on higher costs associated with recruitment, retention and the maintenance of reasonable working hours. Rural GP costs are determined the rural ranking scheme under the Rural Health Care Premium Scheme. This model includes the following factors:

   a. Travel time from practice surgery to major hospital
   b. Travel time from practice surgery to most distant practice boundary
   c. Travel time from practice surgery to nearest GP colleague
   d. Availability of GP colleagues to support on call service duties
   e. Whether the GP is on call for major trauma
   f. Whether the GP holds regular peripheral clinics

VII. **Travel and accommodation**: New Zealand’s national Travel and Accommodation policy requires DHBs to reimburse eligible patients for costs associated with travel and accommodation. A national per person average cost was determined and DHBs are reimbursed based on their populations. Where calculated costs are lower than actual expenditure within a DHB, those DHBs are reimbursed for the difference based on the extent to which that difference is due to diseconomies of scale (Penno et al, 2012).

**Tanzania**: In 2004 the Tanzanian government started to implement reforms to the way in which resources were being allocated to decentralized health districts. In a move to ensure greater equity in the allocation for resources through an objective assessment of need the Tanzanian government started allocating a portion of health resources through a needs-based funding formula. Included in this formula are weightings that include:
• Age and sex weighted population (50% weighting)
• Poverty levels, based on Tanzania’s Poverty Welfare Index (15% weighting)
• An index of mileage to and within the Local Government Authority, as a proxy for rural (15% weighting)
• Burden of disease index that incorporates under-five and adult mortality rates (20% weighting) (Semali and Minja, 2005)

Kenya: The Kenyan government uses a resource allocation formula that includes variables that are weighted for factors of rurality. These factors include, amongst others, poverty rates, under-5 population, number of women of reproductive age, area of the district (sq. km.) and for fuel costs to account for distances for outreach (Chuma and Okungu, 2011).

India: In India the National Rural Health Mission (NRHM) has advocated for the increase government spending on primary health care infrastructure in rural areas by developing and supporting the implementation of an allocation formula where the division of revenue for health service delivery between states is weighted in favor of those with relatively poor health indicators. In some states this has formula has resulted in a three-fold increase in government spending on rural infrastructure (Durairaj and Evans, 2010).

Zambia: Zambia makes use of a deprivation index to ensure greater equity in the allocation of resources. This index includes variables that account for differences between urban and rural including measures of poverty, disease burden, access to basic services and a measure of the availability of health care personnel per capita.

Canada: The Ontario Ministry of Health uses a Health Based Allocation Model that includes population characteristics to fund both hospital and community level care. In addition to factors such as demographic, clinical and financial components, this model includes a rural component to account for cost differentials in providing care.

There are two primary rural components to the HBAM: the first accounts for the distance to the nearest primary and secondary referral centre. The second component accounts for diseconomies of scale in small rural hospitals (Ontario Ministry of Health, 2012).

5. Definitions or typologies of ‘rural’ used in South Africa

In South Africa there is currently no standard definition of rural. Government departments, Non-Governmental Organisations, research institutions, universities and other stakeholders tend to use their own definitions or do not clearly articulate any definition at all even though their work directly relates to rural issues.

Vermaak (2006) carried out a study on definitions of ‘rural’ and ‘urban’ in South African health research her review of 295 journal articles relating to health research found that, despite making comparisons between urban and rural populations in various indicators, no definition was offered in 24% of articles reviewed. Furthermore, in 29% of the articles, no definition beyond the use of the community names was offered. The most commonly used criteria (used in 42% of articles) for defining urban or rural was based on classifications traditionally used by StatsSA in its Demographic Health Survey and General Household
Surveys. According to Vermaak (2006), in these articles the criteria taken from StatsSA definitions most commonly used included the following factors:

- **Area type:** This criterion included whether or not the area fell within a traditional or tribal authority and whether residences were situated in agricultural areas or forested land.
- **Presence of basic services:** categories of both urban (urban formal/urban informal) and rural (rural formal/rural informal) were based on the availability of water, electricity, sanitation and the availability of a tarred road.
- **Housing type:** This criterion included the type of dwelling such as formal/informal and traditional/non-traditional.
- **Demographic factors:** This criterion included measures of population size and/or density.

**Deprivation indices as a proxy for rural**

Using indices of multiple deprivation, as a proxy measure for rural has become a popular option for many researchers in South Africa, particularly where the geospatial mapping of poverty and inequality are needed. Deprivation indices use any combination of demographic, socio-economic, developmental, service related, political and epidemiological factors to develop an aggregate index that is used to compare defined geographic units based on relative levels of deprivation. There are a number of indices of deprivation used in South Africa that differ based on the variables they include and their base geographical units (Nobel and Wright, 2012). At a national level the following indices are available (lists adapted from Nobel and Wright, 2012):

- Vichi’s (1997) index of deprivation based on the 1993 South Africa Living Standards and Development Survey;
- Klasen’s (1997, 2000) deprivation index which uses the same dataset as above;
- A Lived Poverty Index (Afrobarometer 2004, 2005);
- The United Nations Development Programme (UNDP)’s Human Development Index, Human Poverty Index, Gender Empowerment Measure and Service Deprivation Index (UNDP 2003);
- A Capability Poverty Measure (UNDP 1996); and a
- Multidimensional Poverty Index (Alkire and Santos 2010)

Provincial level indices include:

- A Household Infrastructure Index and a Household Circumstances Index (Hirschowitz, 2000);
- A Majority Necessities Index and a Proportional Deprivation Index (Noble et al. 2007; Wright 2008);
- The South African Advertising Research Foundation’s Living Standards Measure (LSM) and Universal LSM (e.g. Van Aardt 2005);
- The Western Cape HDI (Department of Health and Social Services of the Western Cape 1999)

At the magisterial level McIntyre et al (2002) have developed deprivation indices based on the relationship between deprivation and health inequities. The Health Systems Trust has
subsequently developed this into a local level index of multiple deprivations for the District Health Barometer2 (Noble and Wright, 2012 and Day et al., 2009).

There is also a ward level Index of Multiple Deprivation that uses census data for each of the 9 Provinces (Noble, 2000). This has since been developed further, and instead of using wards as the geographical units, Noble and Wright (2012) have used data zones, where geographical units are developed with more or less equal population sizes. According to Noble and Wright (2000), this was done to allow for better comparison between units and to have longitudinal consistency, even where political (e.g. ward) boundaries change.

The limitation of using deprivation indices as proxy measures to define rural is that it is based on the not unfounded assumption that rural areas in South Africa generally have higher levels of deprivation than urban areas. While this approach is useful to determine inclusionary criteria for rural development purposes, it does mean that discretion will still be required when deciding on which areas should be excluded as urban-deprived. It also tends to foster definitions based on deficit rather than what shapes and defines the rural context, its assets and its needs.

Definitions of rural used in rural development policy frameworks

As is the case with research more broadly there is no single definition of rural used in government policy and definitions used tend to vary quite widely.

Even in the various iterations of the government’s rural development strategy the definition of rural is somewhat ambiguous and inconsistent over time. The first Rural Development Framework (1997) post 1994, pointing to the difficulties in defining rural adopted a broad and somewhat ambiguous definition. It defined rural as:

“…the sparsely populated areas in which people farm or depend on natural resources, including the villages and small towns that are dispersed through these areas. In addition, ‘rural clusters’ in the former homelands, i.e. large settlements without an economic base except for transfer payments, are also included”.

This definition used crude population density and economic factors that, as the framework itself notes, results in “a problem with this definition [in] that many households fall into both urban and rural categories as they derive their income from a range of sources, including labour migration to towns” (South African Government, 1997)

The follow-up to this strategy, the Integrated Rural Development Programme Strategy (IRDPS was more explicit in its assessment of the difficulties in developing a single definition of rural that could be used. The IRDPS policy framework states that:

2 The DHB Deprivation Index uses the following measures: proportion of the area’s population that are children below the age of 5; The proportion of the area’s population that are black Africans; the proportion of the area’s population that are from a household that is headed by a female; the proportion of the area’s population whose household heads have no schooling; the proportion of area’s adults between 25 and 59 classified as both not working and looking for work or not working and not looking; the proportion of the area’s population that live in traditional dwelling, informal shack or tent; the proportion of the area’s population that have no piped water in their house or on site; proportion of the area’s population that have a pit or bucket toilet or no form of toilet; and the proportion of the area’s population that do not have access to electricity or solar power for lighting, heating or cooking
“…there is little agreement on what constitutes rural areas and rural populations, and ambiguities still surround the concept of rural. A related problem is that the rural/non-urban areas are far from homogenous and include geographical areas and populations that often differ markedly from one another…overlaying these differences are a range of variations including ecological and natural resources, human settlement patterns, language and cultural differences, lifestyle differences, the proximity or distance of large urban and industrial conglomerates, etc.” (SA Government, 2000)

In the end the IRDPS used spatial targeting based on the criteria set out by the Demarcation Board’s classification of District Councils (rather than municipalities) to identify 13 rural nodes across the country based on a matrix identifying poverty levels, institutional capacity, access to infrastructure and service delivery. Initial selection of nodes based on these criteria resulted in the majority of nodes being based in the Eastern Cape and KwaZulu-Natal and a political decision was taken to ensure that there was at least one node in each province except Gauteng (Harmse, 2010). In essence, rural under the IRDPS was defined as geographic areas with low levels of infrastructural and economic development with high levels of poverty with an added factor of provincial representivity.

The Comprehensive Rural Development Programme (CRDP) replaced the IRDPS in 2009 as the Department of Rural Development and Land Reform’s (DRDLR) primary rural development strategy. The CRDP, while critical of the lack of a legal definition of rural and problems associated with defining rural as everything that is not urban approach used by StatsSA at the time, did not itself explicitly define rural (SA Government, 2009). Instead, the CRDP identified pilot sites in all provinces (except Gauteng) where programme interventions would be implemented. It is not clear exactly how the CRDP chose each of its pilot sites but it is implied that they were selected primarily in terms of their levels of poverty and underdevelopment. The CRDP then seemed to work backwards and developed community profiles of each of the sites based on the following criteria:

- The major patterns of resource use in the community;
- The settlement patterns of the community;
- The major livelihood patterns of the community and which groups of households are engaged in those patterns, illustrated by maps, rankings and seasonal calendars;
- The main visible, formal and traditional institutions presented in the community;
- The importance and accessibility of services in the community; and
- A historical profile of the community, different groups within the community and resources and resource use over time

These profiles are then used to determine the kinds of development projects to be implemented in each site.

The DRDLR has not used these community profiles to develop a more nuanced definition of rural based on trends that have emerged in pilot sites based on these criteria that could be used in future programmes. It appears that in terms of the CRDP the definition of rural has remained discretionary and on a site-to-site basis.

**Definitions of rural used by government departments**

There is currently no single definition of rural used in government policy and planning and various state institutions use different ways of defining rural. Schmidt (2012) has grouped
these various definitions into 4 general typologies for the purposes of classification and analysis. The typologies vary in terms of scope, scale, application and the types of variables that informed the development of the typology.

The four general typology groupings identified by Schmidt (2012) are:

1. **Administratively defined**: Administrative sub-units such as provinces, districts, municipalities or wards are defined as rural or urban. These units are used by Treasury and the Department of Cooperative Governance and Traditional Affairs

2. **Morphologically defined**: These are based primarily on urban form, such as urban settlement patterns, urban infrastructure and land use. In this approach, rural is defined/inferred as the ‘non-urban’ form. StatsSA uses this ‘definition’.

3. **Demographically defined**: These definitions are the most widely used and largely depend on settlement size and density. Demographic criteria such as size and density are prone to misclassification error as time lapses

4. **Functionally defined**: Based on how space is conceived and used. Based on a number of different variables resulting in a range of classes. Examples are functional definitions developed for Departments of Social Development (DSD), Department of Water Affairs (DWA), and the Council for Scientific and Industrial Research (CSIR).

Schmidt (2012) then discussed various government agency and department approaches to defining rural. Summaries of some key examples are discussed below:

**StatsSA typologies**: StatsSA has the role of providing generalised statistical information, and thus has developed its typologies primarily using Census data. The units analysed were Enumerator Areas of the Census, and these are divided up according to the number of households that can be visited by an enumerator\(^3\). The size of these areas varies considerably. The basic criteria used to divide the areas into rural or urban were the cadastre\(^4\), and land use. The basic classification is urban (consisting of urban formal and urban informal), and rural (consisting of rural formal and tribal areas). This typology was last formally used in the 2001 census but the EA of the 2011 census are similar enough to make linkages (Schmidt, 2012: 45).

For example, StatsSA in Gender statistics in South Africa 2011 (p. 4) lays this out clearly by applying Census 2001 definitions:

> “An urban area is defined as a continuously built–up area with characteristics such as type of economic activity and land use. Cities, towns, townships, suburbs etc. are typical urban areas… On the other hand a rural area may be defined as any area that is not classified urban. Rural areas may comprise one or more of the following: tribal areas, commercial farms and informal settlements”.

**Council for Scientific and Industrial Research (CSIR)**: The CSIR is committed to generating scientific knowledge, and thus has developed its typologies to suit this purpose.

The following 2 are most relevant to this discussion:

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3 An enumerator area is a pocket-sized piece of country which is visited by an enumerator during a Census. The people in each EA are counted by means of administering questionnaires. The country was divided into approximately 94 000 EAs for Census ’96.

4 Cadastre: A public register showing the details of ownership and value of land; made for the purpose of taxation
**Functional urban and rural typology:** Rather than simply classifying areas as either urban or rural, this typology classifies areas on a continuum of nine “space types” that range from functional urban nodes to dispersed rural settlement areas. These space types are determined based on a number of criteria, including: employment opportunities, economic potential per sector, travel times and access routes (Huysteen et al, 2009).

**Settlement typology:** This uses the functional urban and rural typology described above, and divides areas up into categories according to types of settlement: city regions, cities, regional service centres, service towns, local and niche settlements, and clustered and dispersed settlements. It also identifies flows and linkages associated with accessibility between settlement types.

Both these typologies rely on data generated from the CSIR’s Geo-spatial Analysis Platform (GAP). GAP is a spatial planning and data analysis tool that analyses and maps data (e.g. economic and human activity; quantitity of activity; and accessibility) across 25,000 “mezozones”, each approximately 50 km2 in size (Van Huysteen et al, 2009).

Importantly, as Van Huysteen et al (2009) note, GAP makes it possible to determine the remoteness and accessibility of any of the 25,000 “mezozones” in terms of weighted travel times from any place to any type of place. It is possible, therefore, to determine the average weighted travel time for community members from any village to the nearest small town or metropolitan area.

**Treasury and Department of Co-operative Governance and Traditional Affairs (COGTA):** Both departments are concerned with allocation of resources to administrative (e.g. local government) and service delivery (e.g. Department of Health) government agencies. To perform this function both departments require typologies that distinguish between urban and rural. They use administrative typologies.

Even though geographic location is not currently used in municipal or provincial equitable share allocations, there are instruments targeted at rural and urban areas. For rural areas these are: Rural transport Infrastructure and systems grants, rural households’ infrastructure grants, and Expanded Public Works Programme (EPWP) incentive grants for municipalities. In order to decide on allocations, a way needed to be found to divide up the country into areas that are urban and those that are rural. The Department of Provincial and Local Government (DPLG) in partnership with the Development bank of SA (DBSA) has developed the Municipal Infrastructure Investment Framework (MIIF), with various categories: metro, 4 categories of local municipality, and 2 categories of district municipalities. In this categorisation, 2 of the local municipalities and 2 of the district municipality categories are considered rural (Development Bank South Africa, 2009).

<table>
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<tr>
<th>Table 2: MIIF Typology</th>
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<tr>
<td>A</td>
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<td>B1</td>
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<td>B3</td>
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<td>B4</td>
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</table>
C1 District municipalities which are not water service authorities (rural)
C2 District municipalities which are water service authorities (rural)

**Department of Water Affairs (DWA):** This department has had the strategic focus of service delivery including to those living in areas with poor service delivery. They have mapped settlements, according to their own settlement delineation criteria. Their system is flexible and continuously updated. Their typology is well ahead of others in terms of developing sub class systems for rural settlements. The table below gives the typologies used (demographically defined, settlement typology).

<table>
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<th>Table 3: DWA Typology</th>
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<tbody>
<tr>
<td>A1 Metropolitan area</td>
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<tr>
<td>A2 Urban formal town</td>
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<tr>
<td>A3 Urban former township</td>
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<tr>
<td>A4 Working towns mining etc.</td>
</tr>
<tr>
<td>B1 Urban fringe informal settlements</td>
</tr>
<tr>
<td>B2 Urban fringe ex homeland town</td>
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<tr>
<td>C Rural dense village &gt; 5000</td>
</tr>
<tr>
<td>D Rural small village &lt; 5000</td>
</tr>
<tr>
<td>E Rural: Rural scattered Rural scattered dense Rural scattered low density Rural scattered very low density Informal Settlement rural</td>
</tr>
<tr>
<td>F Farming</td>
</tr>
<tr>
<td>O Other (service centres, mines prisons etc.)</td>
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</table>

**Department of Social Development (DSD):** The DSD needed to define rural for the purpose of staff deployment and remuneration. The CSIR to help identify areas where social workers would qualify for a rural allowance, to be given to attract and retain social workers to areas classified as difficult to live and work in. The CSIR study (Mans et al, 2008) was based on focus group discussions with social workers to determine what their criteria would be in terms of living and working conditions. Two broad categories of factors were identified:

- Living environment: (personal perception and living conditions)
- Work environment (management support, workplace, other institutional support and physical working conditions).

This was followed by a geospatial analysis where the distance from the area where social workers were required to work to major towns and metros and various other settlements was determined. These were put into a composite index called the accessibility index, which was a proxy for living conditions.

Physical work conditions were analysed based on condition of the roads, and profile of the service area population, also the proportion of households below the minimum monthly income needed to sustain a household (the higher the proportion, the higher the potential work burden of social worker). This index was a proxy for physical working conditions.
A typology of 6 categories of areas was developed.

- Categories 1-3: These may contain pockets of poverty, but a social worker could potentially live in a nice area and work in a less favourable area.

- Categories 4-6: These contain high concentrations of poverty, which extend over vast areas or regions. These areas are relatively isolated, and are more likely to be high burden areas where living conditions will be less than optimal.

The final incentive index for the rural allowance was based on a relative contribution of 25% remoteness and 75% work burden.

**Department of Basic Education (DBE):** The DBE does not explicitly define rural but works on the assumption that due to the legacy of apartheid and separate development, schools that fall into the most deprived population quintiles (1-3) are mostly rural. This means that interventions aimed at rural education will largely be based on quintile classification in combination with discretion around specific inclusionary and exclusionary factors (DBE, 2014).

**Department of Health (DoH):** The DoH has developed a draft rural health strategy, but the strategy does not explicitly define what rural areas mean. This strategy is based on the premise that the districts ranked lowest in the deprivation index as used for the district health barometer, should be considered as rural.

The only typology actively in use by the DoH at the moment is the classification of health facilities as ‘rural’ or ‘hard to staff’ for the purpose of paying a rural allowance. Facilities classified as situated in the ISRDP nodes and other rural areas designated as such by the Public Health and Welfare Sector Bargaining Council (PHWSBC). A total of 178 facilities in addition to those situated in the ISRDP nodes have been identified across the country, were a rural allowance could be paid to health workers working there.

The problem though, as Schmidt (2012) alludes to, is that the selection of ISRDP nodes was not entirely scientific and involved political considerations such as ‘provincial representativity’ that have resulted in the inequitable implementation of the rural allowance. For example, rural allowances paid to health staff in large hospitals in well-resourced areas such as at Port Shepstone or Edendale (Pietermaritzburg) in KwaZulu Natal, received higher rural allowances for doctors and nurses than designated ‘rural’ hospitals. The better living conditions at these sort of places resulted in the so called ‘inhospitable urban ‘ hospitals located in ISRDP nodes attracting staff away from rural and deep rural hospitals that should have benefitted from improved staffing as a result of these allowances(Schmidt, 2012).

Schmidt (2012) also found that there is no apparent consistency in approach and methodology when deciding which areas are rural, between DoH, DSD, and DoE, all of which seek to attract and retain staff in ‘rural’ areas. She concludes that there should be no specific reason why different service departments should use different standards to determine where rural allowances should be paid. The typology developed for DSD with scientific rigour could be applied to rural and hard to staff allowances for DoH and DoE.
Why does the government of South Africa use so many typologies?

This use of the typologies described above by the various departments, leads to a situation where some areas might be classified as rural by one department, but not by another. Schmidt (2012) identified 5 possible causes for this lack of synergy:

1. There is limited central guidance on what should be defined as rural.
2. Perspectives and needs of different spheres of government from a spatial and settlement typology are often divergent requiring different definitions.
3. Declaration of ISRDP rural nodes enabled clear guidance to be given, but limited the scope and reach of the programmes.
4. There was a divergence of purpose for which the typologies were intended.
5. There is a tension between urban planning principles, which have a form rather than function bias, and the need for a comprehensive and integrated development, which requires more functional definitions.

6. Discussion: What are the priorities now for rural health in terms of definitions of ‘rural’?

What has become clear throughout this review is that even in broad terms a common definition of rural is difficult if not impossible to achieve. As Charls Galpin, a founder of rural sociology, lamented in 1918, the terms “rural and urban might be abandoned as theoretically hapless” (Larson and Hart, 2003).

This is largely due to the fact that there is so much complexity and diversity in what constitutes both rural and urban that it is difficult to distil these concepts down to a few factors that can be used to develop a universally useful single definitions.

But as this review has also argued, this in no way suggests that we should abandon efforts to develop definitions, taxonomies and typologies for practical and analytical purposes. In this respect, definitions are important in so far as they provide the basis for targeting policies and interventions based on an agreed set of criteria of what should be included in that policy or intervention. As Larson and Hart (2003) conclude, the answer to the question “what is rural?” must be “it depends on the question that is being asked”.

As the section on typologies in the South African context has shown, there is some good work that has gone in to the development of typologies that are fit-for-purpose operational definitions and that appear to have asked the right questions. The work done by the CSIR, DSD and the DWAF are particularly good examples in this regard. They have all developed typologies that include factors that make sense in terms of what they are being used for. Put simply, they are fit-for-purpose.

There are, however, also examples of where rural ‘defined’ as not urban or using factors that are too broad or non-specific to be useful. The definitions of rural and rural typologies used in various iterations of the Government’s rural development strategies have shown how, even where rural development is the specific focus of the policy framework, concise and technically rigorous definitions are hard to achieve and are sometimes subject to political considerations rather than quantifiable criteria.
It is particularly troubling that there are no consistent typologies used in the Government’s two biggest departments in terms of resource use and reach. Research has shown that rural populations have particularly poor access to both healthcare and education and that improving access demands targeted policy interventions that deal with rural specific service delivery and access barriers.

In terms of health there are two primary questions that this discussion document has raised in this regard: the first is whether or not a definition of rural for rural health research, policy, planning, resourcing and delivery is actually necessary. The many clear difference between urban and rural health service delivery and access, due to factors related as remoteness, socioeconomic status and health outcomes would suggest so. This is supported by examples from both developed and developing nations which have developed definitions and indices, with various degrees of technical complexity, that are used for the purposes of planning and resource allocation.

The second question raised in this discussion document was that if a definition were necessary, what would such a definition look like? While the exercise of establishing a rural health index is beyond the scope of this discussion document, it is possible to outline the ingredients, based on what is currently being used in health systems around the world, which should be considered when developing taxonomy/ies for rural health.

While rural health definitions and indices differ in terms of the number and complexity of factors they use, all use at least one measure form the following categories that are measures of health need: geographical remoteness; demographic measures; specific community characteristics; and rural cost adjusters.

As has already been argued, determining which categories and which measures are used depends largely on what the definition or index will be used for. But as a minimum the measures should meet the following criteria (Hart et al, 2005):

1. Measure something explicit and meaningful (precisely and clearly defined, using criteria which are meaningful to the task in hand).
2. Be replicable (able to be copied or duplicated with the same results)
3. Be derived from available high quality data.
4. Be quantifiable and not subjective (can be measured or counted, and not dependent on the particular person doing the measuring).
5. Have on-the-ground validity (be able to measure what it is supposed to measure).

In South Africa there are data available for each category of measures (many discussed earlier) which could be used in the development of a typology or index. Where data is not available there are government agencies such as StatsSA, CSIR and the Medical Research Council that would have the capacity to collect and process some categories of data if needed. Some examples of data and data sources for each category include:

1. Measures of health need: The DoH makes use of a District Health Information System to collect both clinical and utilization indicators form within the health system. Parastatals such as the MRC and CSIR also collect data on utilization as well as epidemiological data. Many academic and research institutions also collect, process and model data on health indicators. Demographic and socioeconomic data is collected, processed and published by agencies such as StatsSA and various government departments as part of the Census and periodic household surveys.
2. Measures of geographical remoteness: The CSIR and academic institutions make use of various methods using GIS data to determine measures of remoteness. CSIR’s Geo-spatial Analysis Platform is a good example of a flexible system that can be used to determine measures of remoteness based that can be adapted for purpose.

3. Population measures: StatsSA collects and publishes population data based on the Census as well as periodic household surveys. The CSIR also uses this data in geospatial analysis and mapping.

4. Some measure of specific circumstances that affect particular communities: the inclusion of this category in a rural health index would depend largely on what it would be used for. A policy decision, for example, could be taken to prioritise areas that formed part of the former homelands because of historical neglect, even where population density may be high.

5. Rural cost adjusters: there is currently no research or data that provides a measure of the differences in cost due to distances between urban and remote facilities or the impact of diseconomies of scale. There are, however, research institutes that have the capacity and know-how to develop these cost adjusters.

The selection of measures will depend on the reliability of available data and an assessment of acceptable trade-offs between inclusionary criteria and reliability of measures will need to be made.

Most importantly though, the development of typologies or indices of rural for health in South Africa requires an understanding of what they will be used for. Most definitions, typologies and indices developed internationally are used to target the allocation of resources to rural populations. This would be the primary purpose in South Africa too and typologies or indices could be used in any number of processes at all levels of the health system to promote both greater equity and efficiency.

What follows are two examples of where the measures described above could be used to improve equity and efficiency in health resource allocation processes that could be of benefit to rural health. The first relates to changes that could be made to how rural allowance is made and the second is the development of a population based funding formula that could be used to improve equity in allocations between districts and facilities within provinces.

Rural typology for HRH recruitment and retention: As was argued earlier, one of the most significant barriers to access in rural areas is the shortage of critical health care personnel. In response the DoH has implemented the rural allowance as a mechanism to improve recruitment and retention of personnel to rural areas. The problem, however, is that this mechanism is based on IRDSP rural nodes which has meant that its implementation has been uneven and lacking necessary nuance.

To improve on this mechanism the DoH could develop its own typology that categorises rural in ways that would allow for the development of a rural allowance index that more meaningfully differentiates between rural and urban and within rural itself.

The DSD example discussed earlier provides a good template for this and could be adapted quite easily. Factors that could be included in determining a rural health allowance index may be able to include a combination of living/working conditions with an accessibility index. These factors could be determined by:
1. An assessment of the living conditions by measuring personal perceptions of living conditions within a defined area (e.g. sub-district level). This would necessitate a qualitative assessment of living conditions amongst staff but certainly could include a quantitative geo-spatial assessment of the accessibility of economic, educational and social activities.

2. An assessment of working conditions based on a measure of workload (e.g. based on the average number of patients seen per day and the complexity of cases) based on processed data provided by the HST and MRC, for example, as well as a survey amongst health care workers on their perceptions of working conditions by sub-district or facility.

3. An assessment of accessibility that could be determined by average distance to an urban centre, for example. The CSIR could assist in using GAP to develop an index of accessibility that could be used to determine the remoteness of all facilities in the country.

These factors could then be combined to develop a typology that contains various categories of rural districts, sub-districts or facilities that could then form the basis for a rural allowance index. For example a Category 1 rural facility may service rural communities but is close enough to an urban centre for the health care worker to easily commute. A Category 6 rural facility on the other hand only provides services to impoverished rural communities, have heavy workloads and difficult living conditions for healthcare workers with little access to basic amenities. The allowance healthcare workers receive is then determined by which category their facility falls.

**Population based funding formula for health:** While the equitable share formula currently being used does include a measure of health need to determine the division of revenue from the national level to provinces, it has no influence on how resources are distributed at the provincial or district level. Division of revenue at these levels is largely incremental and historically based and does not differentiate between urban and rural. There is some evidence that demonstrates that this has lead to an infrastructure inequity trap, where rural districts and facilities are disadvantaged when it comes to budget allocations.

One way to ensure that there is greater fairness in the budget would be to develop zero-based budgets for each facility in the country that are based on what is actually needed to deliver a particular level of service. This is not practical and extremely resource intensive. A good alternative would be to develop a population based funding formula akin to the ones described earlier that could include a rural index that would adjust allocations based on need and cost.

The first step would be to select factors that are quantifiable, have reliable data sources and are high in validity and accuracy. Then based on the geographical unit of measure (facility catchment, sub-district, district) a combination of factors could be used to develop a weighted index that includes:

1. Population numbers: as a minimum these formulas require a measure of the size of the population being served to determine per capita allocations.

2. Measure of health need: greater need for health care demands higher allocations. Demographic factors such as age and sex profiles (StatsSA) and socioeconomic status (Deprivation indices) could be used as proxies for both need and access. Mortality measures could also be used as a proxy for need, although complexity could be added by including epidemiological data for
priority conditions. Using clinical and utilisation data is not particularly helpful as utilization in rural settings may be lower due to socioeconomic and geographic factors.

3. Adjusters for differential costs: The formula could then include cost adjusters that give a higher weighting to districts and facilities that experience higher costs in service provision. An important adjuster would be a rural health adjuster that could include measures that account for:

   a. Greater distances for inter-facility transfers (CSIR GAP).
   b. Greater average distances to perform outreach which leads to more time to reach patients and requires additional personnel to perform outreach (CSIR GAP).
   c. The effect of diseconomies of scale that make per capita costs higher in rural areas than urban areas for the same level of care (to be determined).
   d. Greater EMS costs due to greater average distance and time needed to reach patients and the effect of difficult topography on the lifespan of vehicles (to be determined).
   e. Account for the additional cost of rural GPs participating in GP contracting to account for things like greater distances and travel times to undertake facility visits (to be determined).

Based on the availability and quality of data, as well as which of these variables is considered most appropriate within each context, a weighted equitable share formula could be developed that ensures resources are allocated based on a measure or resource need.

7. Recommendations for the way forward

The two approaches to developing fit-for-purpose typologies discussed above are by no means comprehensive or exhaustive. They merely provide examples to illustrate the kind of processes that could be followed in developing typologies that could contribute to improving equity in access and service provision between urban and rural health contexts.

For this to work to be taken forward a consensus approach must be used to ensure buy-in and ownership of the process by all stakeholders, particularly the Department of Health. Practically this would require that:

1. The argument is made that there is value in embarking on a process of developing rural health definitions, typologies and/or indices. This approach should be based on evidence that can demonstrate the equity and efficiency gains of taking this work forward into the policy process.
2. The purpose of definitions and typologies of rural must be clearly defined. The purpose may only be for HRH and Budgeting or for a broader set of activities and services; but this must be established.
3. Factors/variables that can be used as measures of rurality (e.g. population density, distance, deprivation) must be identified. These factors should be meaningful, valid, quantifiable, replicable and derived from high quality data.
4. Typologies should then be developed, tested and refined. They should be simple enough to implement that they do not add unnecessary complexity to policy and resourcing processes.
5. Their use should be promoted and monitored. There is no use in defining rural and developing typologies if they are not put into action.

As South Africa continues with health system reforms under the banner of the National Health Insurance with the state purpose of improving access, equity and efficiency in health care service provision it is essential that rural health be mainstreamed into these reforms. Rural health differs in ways that extend beyond the provision of services to populations that experience high levels of deprivation. Broader issues of accessibility and remoteness as well as demographic profiles and dynamics mean that rural is a more complex service delivery environment than its label of underserved would suggest.

This complexity does, however, mean that it is not possible to develop and use a definition of rural that is universally applicable across all sectors and for all purposes. It is therefore essential that we identify where definitions, typologies and indices of rural are needed and are practically useful in achieving the fundamental goal of universal coverage that is equal access for equal need. There are nonetheless key components that should be included in any approach, which at a minimum should include an understanding of the impact of remoteness on health care both in terms of access and provision, differing needs of rural communities, the costs associated with providing care in these areas and impact that historical neglect has had on the delivery of services to rural people. Without understanding and accounting for the complexities of rural, the country runs the risk of further entrenching neglect and inequity in the health system.
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