Urban Health–Urban Living

An interdisciplinary research project in Cape Town, South Africa

Mid-term Report

Presented by:

University of Cape Town, South Africa

Centre for Medicine and Society (ZMG)

University of Freiburg, Germany

Biological Anthropology

Environmental Medicine

Psychosomatic Medicine and Psychotherapy

Palliative Medicine

Medical Sociology and Psychology

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List of Contents

Executive Summary

Durch den weltweiten Anstieg der Populationen in städtischen Räumen ist die Erforschung von Gesundheit und Krankheit in diesen Gebieten von zunehmender Bedeutung und wird in naher Zukunft einen noch bedeutenderen Platz in der Wissenschaft einnehmen. In diesen Bereichen ist vor allem die interdisziplinäre Zusammenarbeit von großer Wichtigkeit.

In dem hier vorgestellten Projekt zur städtischen Gesundheit haben sich vier Disziplinen (Biologische Anthropologie, Umweltmedizin, Psychosomatische Medizin und Psychotherapie und die Palliativmedizin) in dem Bestreben zusammengeschlossen, die stadtspezifischen Gesundheitsherausforderungen zu analysieren und langfristige Lösungsvorschläge zu erarbeiten. .

Ziel der Studie ist in einem ersten Schritt, die verfügbaren Daten der Modellstadt Kapstadt, Südafrika, zu analysieren, um zu einem genaueren Verständnis des Gesundheitszustandes, der Bedingungsfaktoren und des Potentials des Gesundheitssystems im urbanen Raum zu kommen. In Form einer Gap Analysis soll geklärt werden, in welchen Bereichen eine vielversprechende Ausgangslage besteht und in welchen Bereichen eine die Generierung weiterer Daten erforderlich sein wird. Zentrale Aktivitäten der ersten Phase beinhalten eine Literaturrecherche sowie eine Erfassung der verfügbaren Daten, um einen Überblick der vorhandenen Information zu gewinnen und die Versorgungsstrukturen in Kapstadt zu bestimmen. Weiterhin soll die Identifizierung und erste Kontaktaufnahme zu potentiellen Stakeholdern und darauf aufbauend die gemeinsame Ausarbeitung und Durchführung der Studie mit der Partneruniversität Cape Town geleistet werden. Während der Suche nach Sekundärliteratur konnten in vielen Bereichen Datenlücken identifiziert werden. Vor allem in der Mutter-Kind-Gesundheit besteht weiterhin großer Forschungsbedarf. In den Bereichen Umweltmedizin und Psychosomatische Medizin und Psychotherapie lassen sich eine Reihe von Interventionsmöglichkeiten erkennen.

Die derzeitige im Bericht dargestellte Datenlage ergibt sich hauptsächlich aus aufbereiteten Informationen aus dem Internet; die Analyse der entsprechenden Rohdaten war bisher noch nicht möglich, da diese noch nicht zugänglich sind. In einer zweiten Projektphase besteht die Möglichkeit eines Vergleichs der Modellstadt Kapstadt, Südafrika mit einer Stadt in Deutschland. Anhand der Analyse der vorhandenen Daten von Gesundheit und Krankheit in urbanen Räumen mit einem

Schwerpunkt auf den Zugangsmöglichkeiten zur Gesundheitsversorgung sollen letztendlich gesundheitsrelevante Interventionsstrategien entwickelt und in die Praxis umgesetzt werden.

Um die vier Disziplinen effizient zu koordinieren und hohe methodologische Standards zu gewährleisten, wurden zwei übergeordnete Institutionen einberufen: die Medizinische Soziologie und Psychologie und die Projektkoordination. Die Medizinische Soziologie und Psychologie unterstützte die vier Disziplinen in der Modellentwicklung während der Vorbereitungsphase und ist auch während der Projektlaufzeit in diesen Bereichen behilflich.

Die Projektkoordination unterstützt die administrativen Tätigkeiten dieses Projektes und hilft bei der konzeptionellen Entwicklung.

Part A – GENERAL INFORMATION AND PROJECT MANAGEMENT

1. Background of the project

Rapid urbanization is a global contemporary phenomenon occurring particularly, but not exclusively, in low- and middle- income countries. Along with this process specific health risks are emerging at a massive scale outweighing in many cases the obvious benefits of improved infrastructure, more accessible health services and faster communication. The underlying causes are multiple and successful interventions require analytical skills of many disciplines: A wide range of expertise is needed to combine analytical tools from epidemiological, biological and social sciences with strategies to enhance communication between political decision makers, researchers, urban developers, health planners and economists in order to develop cost-effective prevention and treatment strategies at scale.

With the intention of harmonizing biological, psychosocial and ecological concepts of health in urban areas we have to go beyond a traditional biomedical understanding and strengthen the interaction with other disciplines in order to get a comprehensive understanding of urban health problems such as the rising prevalence of mental disorders as part of the dual burden of non-communicable disease (cardiovascular diseases, cancer, diabetes, obesity, developmental disorders and others) and communicable diseases (diarrheal diseases, respiratory infections, vector borne diseases and others).

2. Coordination and Administration

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2.2 Project coordination: Team and management approach

Harmonization of activities in joint research projects run by interdisciplinary teams is most effective and efficient when coordinated in a consistent and proper way. The development of objectives, targets, and commitments as well as the dissemination of consensus reached through discussion required a proper management of the activities. The team of the ZMG Centre have implemented and promoted a team work approach for achieving the intended results. Our style and experience in managing social projects in research and capacity building science is contributing for the successful implementation of the proposed activities as well as to follow up the commitments from different actors.

ZMG coordination has been able to make significant progress on the finding the best practice to coordinate different disciplines and departments with the aim of putting into practice the interdisciplinary concept. Five coordination meetings (one every month) have been prepared and implemented. Commitments have been settled and proper follow-up have performed.

2.3. Methodological approach

To ensure proper coordination of activities by different contributors and disciplines, adequate support and interaction is necessary.

Some of the key activities (in chronological order) that ZMG coordination has developed in the first months of the project are listed below:

1. First coordination meeting with all the actors involved in order to get familiar with each other (on 15.12.2014)
2. Definition of roles and responsibilities of actors involved
3. Presentation and dissemination of the five research projects ensuring consistency with the general objectives of the proposal developed
4. Discussion and agreement with actors of the best way to implement the activities

5. Joint definition of the model city (i.e. Cape Town in South Africa)
6. Agreement of commitments after each coordination meeting with proper definition of activities and deliverables and the responsible actors to carry out the intended tasks
7. Preparation and dissemination among focal points of guidelines for designing research protocols following guidelines from WHO and University of Freiburg
8. Second coordination meeting (03.02.2015) with the aim to incorporate the QA (quality assurance) elements identified by the support unit (Dr. Mirjam Körner) into the research protocols submitted
9. Third coordination meeting (05.03.2015) aiming to assess the experience of "working together" and finding options and opportunities for working closer together (i.e. interdisciplinarity)
10. Consolidation of four individual research protocols into one joint research protocol which should be submitted to ethical bodies
11. Identifying the requirements for sending the protocols for ethical clearance to ethical committees in Cape Town and Freiburg University
12. Fourth coordination meeting (23.04.2015) with the aim of presenting the key results from the field visit to Cape Town (Prof. Wittwer-Backofen)
13. Facilitation of interaction of focal points in Freiburg with potential collaborators in Cape Town according to disciplines
14. Preparation of guidelines for submission of mid-term report to the donor
15. Fifth coordination meeting (22.05.2015) with the aim of presenting the introductory chapter to the mid-term report prepared by Rebekka Mumm
16. Consolidation of mid-term reports presented by each discipline
    Submission and follow-up of research protocol to ethical committees in University of Cape Town and in Freiburg University

Key achievements

1. ZMG coordination center created
2. Matrix of focal points (Freiburg) (see Appendix 1, table 1)
3. Joint research protocol submitted in ethical committees (Cape Town and Freiburg)
4. ZMG Research Flyer development (see Appendix 1, figure 1 -2) with key components, objectives and messages
5. ZMG Poster with key activities and objectives of the new created ZMG centre (See Appendix 1,figure 3)
6. ZMG Homepage development and maintenance (https://www.zmg.uni-freiburg.de/)
7. Implementation of joint plan formulated (including each component)
8. Skype conference calls and several e-mails to key actors in Cape Town

2.4 Conclusion regarding the methodological approach

The Coordination team has contributed significantly to the formulation, implementation, monitoring and evaluation of the research project.
The team has in a consistent way interacted with all the key actors of the project in South Africa and in Freiburg. The best way to achieve the expected results has been identified and shared with all relevant stakeholders. The agreements among participants have been disseminated and properly visualized. The unit is critical and supportive in order to make sure that the targets are being reached.

2.5 Outline of the work plan data analysis

Once the collection of secondary data has been advanced, the research team will start with the more profound data analysis, first within disciplines and thereafter across disciplines. The coordination body will continue in the harmonization function by continuously and systematically being the core point for administrative and technical questions and advice.
From June to December, Dr. Diaz will focus on following up the plans of action proposed by the different disciplines. This will be shared with the other focal points. A joint publication of the experience will be developed at the end of the project.

The ZMG team is also looking for additional funding opportunities in order to extend the experience gained in Cape Town to other settings.

2.6 Lessons learned / best practices

We have several lessons learned from our project.

- Importance of coordination meetings: All focal points agreed that the monthly coordination meetings are the best way to move the initiative forward. The organization of the events, the time management (i.e. 2 hours per meeting) and the formulation of commitments at the end of each meeting are the important factors to realize them successfully. Monthly meetings will continue in the future

- Consistent and open communication: This has been achieved through periodic e-mails, telephone calls and face to face discussions. Unfortunately communication with Cape Town has been challenging given multiple activities of our counterparts in the country. We will develop a communication plan in order to improve the interaction with Cape Town. The expected visit in middle July and the third network meeting in early October 2015 will bring the opportunity to improve this aspect.

- Focal points: The selection of focal points according to disciplines is essential for insuring that the formulated activities are implemented according to plan. Unfortunately some of the initial focal points defined for the activities could not continue, which allowed us to spend more time in informing and training new-comers. We assume that the current focal points will continue being committed to the project.

- Literature review: To have one person responsible for this task has contributed substantially to centralize the activity and ensure quality. The person responsible is a talented PhD student which has facilitated the production of high quality preliminary results.

- Funding aspects: The current project does include mainly funds for personnel of the departments based in Freiburg University. It would be good if future funds would include also a higher amount to other categories such as travel (to Cape Town and from Cape Town). This will increase a more active engagement of the stakeholders in South Africa.

- Project management: The coordination body to manage the research project has been the key for moving the project forward so that activities could be implemented successfully. However, in future the project could highly benefit from an additional person with technical knowledge on homepage development and administration in order to improve the visibility of the project.

- Putting into practice the concept of interdisciplinary: This has been a challenging but a rich experience of this project. We are working from many perspectives, from different disciplines and regions and we can say without any doubt that we have been able to cooperate and in an unique way to realize this concept.

3. Financial Component

The funding for the coordination (01.01.2015 – 30.09.2015) was 49,440 EURO (account number 3091201511). The budget was used for the salary of the coordinator (18,886.81 EURO) and a student assistant (80h/month; 4,608.32 EURO). Their work was to organize administrative activities related to the project (see above). Further, the team created a website and developed a flyer and a poster for the promotion of the project.

The amount of money for the department of Biology/ Anthropology of the university of Freiburg in 2015 (01.01.2015 – 30.06.2015) was 11,764 EURO. The account number is 3091201512. It was spent on research assistant (80h/month) and on a research associate (80h/month). Their task was to compile all the necessary data for the project, to analyse the information and to write the mid-term report.

The funding for the department of Environmental Medicine of the Freiburg University was 11,764 EURO (account number 3091201515). The budget was used for the salary of a research assistant (80 h/month, beginning May 2015). Her work was to

compile the data necessary for the project, to contribute to the analysis and to write the mid-term report in cooperation with the PIs. We plan to engage a student assistant additionally for the next phase of the project (50 h /month) up to 30.09.2015.

The funding for the department of Psychosomatic Medicine and Psychotherapy was 11,764 EURO. The budget was used for the salary of a research associate. Her task was to coordinate the project for this discipline and to write the mid-term report.

The funding for the department of Palliative Medicine was 11,764 EURO. The budget up to now was used for the salary of a student research assistant (40 h/month, beginning of June 2015) and a postgraduate research assistant who started working on the 1st of May (80h/ month).

The funding for the department of Medical Sociology and Psychology was 11,764 EURO. The budget was used for a research assistant (80h/month; 7,840 EURO), a student assistant (50h/month; 3,100 EURO) and for materials (2,000 EUROS).

Part B – RESEARCH STRATEGY AND PRELIMINARY FINDING

1. Introductory chapter – City of Cape Town

1.1 General context

The City of Cape Town (33°55′31″S 18°25′26″E) is located in the south of South Africa at the Atlantic Ocean and has coastline of 294 km (Statistics South Africa, 2015 (Census 2011)). It is a metropolitan municipality which governs the City of Cape Town and its suburbs and exurbs. The climate of Cape Town is influenced by the Atlantic Ocean. Therefore Cape Town has a Mediterranean climate.

The legislative body which is responsible for the government of Cape Town is the City Council. The City Council comprises 221 councillors. They provide a vital link between the communities they serve and the city and are elected to serve five years. The structure of the City Council is shown in the appendix 2 figure 1 (City of Cape Town, 2015a).

The City of Cape Town is subdivided in different disaggregation. The smallest areas are wards (111 wards). Neighbouring wards are grouped together in clusters called sub councils (24 sub councils). These are grouped together in eight planning districts. Besides the planning districts eight health districts exist. The different forms of districts overlap but are not exactly the same. For official investigations e.g. the Census 2011 (by Statistics South Africa) Cape Town is subdivided into suburbs (190 suburbs). Maps for the planning districts and health districts can be found in the Appendix 2 (figure 8 - 9) (City of Cape Town, 2015b).

The currency of South Africa is called *Rand* (symbol *R*; code: ZAR). It is subdivided into 100 *cent* (symbol *c*). The actual currency rate is 1 € = 13,28 R. (stand: 30.04.2015).

The infrastructure of Cape Town, especially the public transport, is managed and controlled by “Transport for Cape Town (TCT)”. In public transport three major public transport operators connect the different parts of the city: MyCiTi, Golden Arrow Bus Service and Metro Rail (see appendix 2, figure 4). Despite these the quality and quantity of the infrastructure is very different within the districts. Cape Town is also a bicycle and pedestrian friendly city with a large network of bicycle lanes and

walkways. With 15 international airlines operating at Cape Town International Airport (89 direct international flights per week) the capital of Western Cape is in great interaction with the whole world. The second biggest airport of South Africa also has domestic terminals and all South African airlines fly to Cape Town (City of Cape Town, 2015c; Cape Town International Airport, 2013)

More information about travel times to educational facilities, work, public facilities etc. in the City of Cape Town can be found the National Household Travel Survey 2014 (Statistics South Africa, 2014).

1.2 Demographic information: (Census 2011-Cape Town)

The City of Cape Town has an area of 2 461 km² and a population of 3 740 025 people. The population density is 1519.7 people per km². All in all 1 068 572 households with an average household size of 3.5 exist. The demographic information about South Africa is based on the census which is conducted in 2011. Therefore sufficient data is available on provincial level but only partly for the City of Cape Town. Table 1 shows the key statistics about the City of Cape Town.

Table 1 Key statistics about Cape Town (Statistics South Africa, 2015 (Census 2011))

Key Statistics 2011	
Total population	3,740,026
Young (0-14)	24.8%
Working Age (15-64)	69.6%
Elderly (65+)	5.5%
Dependency ratio	43.6%
Sex ratio	95.9%
Growth rate	2.57% (2001-2011)
Population density	1530 persons/ km^2
Unemployment rate	23.9%

Youth unemployment rate	31.9%
No schooling aged 20+	1.8%
Higher education aged 20+	16.6%
Matric aged 20+	29.8%
Number of households	1,068,573
Number of Agricultural households	43,383
Average household size	3.3
Female headed households	38.2%
Formal dwellings	78.4%
Housing owned/ paying off	54.2%
Flush toilet connected to sewerage	88.2%
Weekly refuse removal	94.3%
Piped water inside dwelling	75%
Electricity for lighting	94%

The demographic information has to be divided by the aggregation level. For the City of Cape Town the following information are available:

- total population
- male- female ratio*
- age distribution*
- population pyramid* (appendix 2, Table 3)
- fertility and mortality*
- education*
- ethnic groups and languages

(*raw data also available)

For the health districts of Cape Town access to nearly the same information (no raw data expect for mortality) is possible.

1.3 Socio-economic information (Census 2011-Cape Town)

Like for the demographic information the aggregation level of the socio-economic information of Cape Town determines the available information. The following information exists for the city of Cape Town itself:

- households
- average household size*
- occupational groups*
- settlement type
- *housing**
- household goods
- *energy sources**
- access to Internet
- *tenure status*
- source of water*
- *access to piped water**
- *toilet facilities**
- *refuse disposal**
- marital status*
- *employment**
- average household income*
- agriculture
- literacy
- poverty
- crime (numbers)
- *income**
- gross domestic product (GDP)
- Gini Coefficient
- early childhood facilities
- learner-teacher ratio

(*raw data also available)

The existing detailed information on health district aggregation level (no raw data!) is marked cursive.

1.4 Health system, heath services and health

The Health System of South Africa consists of a public and a private sector. Due to that health care varies from basic services like primary health care to highly specialized hi-tech services. Primary health care is, in general, offered for free by the state e.g. for pregnant women and children below six years of age. Although it has to deliver services to about 80% of the population, it is under-resourced in most parts of the state. Besides that, the same amount of people consults traditional healers alongside general medical practitioners.

The main part of health care, especially the public sector, is authorized by the state represented by the Department of Health, the top level of the health system. The next level consists of the provincial health departments. The standard of health care delivered varies from province to province due to different allocations of the available resources.

The health services of the City of Cape Town can be described with input, process, output, outcome and impact indicators of health services. Therefore indicators are necessary (Diaz-Monsalve & Kroeger, 1997).

In general it is hard to get health services information. Information exits for the whole country and the provinces of South Africa. Concerning the City of Cape Town or even the health districts of Cape Town the situation changes. Especially the individual indicators are often not recorded on small disaggregation levels. Furthermore raw data are missing in general. An accessible data source for raw data is the Date First Data Portal which is a service which makes South African survey data available to researchers.

All available information were collected in a database and provided to all participants of the project.

1.5 Summary

A lot of different kind of information exit for the city of Cape Town that will be useful to achieve the proposed aims of the projects. Difficulties occur concerning the level of aggregation. Nevertheless there is information on health district level which enables a classification of the health districts concerning the demographic, socio-economic and even the health care conditions. Due to that it is possible to compare the average income of populations (e.g. ethnic groups) from different health districts. Furthermore statements about transport and access to (health) facilities are possible as information about public transport (bus lines, timetable and rates) exists. In addition population density and number of clinics per district contain information about the supply of people with primary health care. The mortality rates for infants, children and adolescents and the causes of deaths provide the classification of risky health districts. All of the demographic and socio-economic information in combination with health indicators can be used to classify health districts that are interesting for further research e.g. own data acquisitions and programmes.

More information about the City of Cape Town and the Western Cape District are available in the appendix.

2. Biological Anthropology

2.1 Introduction to the component “Biological Anthropology”

In the context of the rapid urbanization worldwide one main task of improving urban health is improving the mother-child health (MHC) care. A comprehensive understanding of key issues is needed. Especially biological and sociocultural risk factors for vulnerable groups like mothers and children need to be identified and evaluated before intervention programmes can be developed. Especially the influence of urban contexts on mother and child health is still partly unknown and not yet fully understood.

2.2 Information and justification

The World Health Organization enacted eight Millennium Development Goals (MDGs) to improve the health conditions worldwide. Two main goals include mother and child health. Based on these goals the project aims to develop a comprehensive view of mother and child health especially in an urban context.

2.3 Methodological approach

To achieve the proposed the availability of Cape Town mother-child health relevant data was examined and analysed and furthermore the datasets themselves were analysed. In addition the association between health outcomes and upstream health determinants were explored and partly compared with provincial/ city priority areas.

In order to get background information on the available information on mother and child health from the anthropological point of view a survey of literature was done. The emphasis was on anthropological literature on mother and child health. A further literature search on MCH concerning Africa in general and South Africa, Western Cape and Cape Town specifically was conducted. For this specific keywords were agreed on and used.
At the current status approximately 300 references are sorted into a database. This database is structured into the following nine groups. The number in brackets represents the number of references in each group. Every reference was allocated to one group.

Anthropology (113)
Western Cape (8)
South Africa (72)
Cape Town (32)
Global Health (28)
Africa (31)
Census Cape Town 2001 (0)
Misc (1)
KiGGS (German Health and Examination study for children and adolescent) (5)

Additional to these groups, several categories are used to sort the literature by general topics, or subject areas. For categories multiple allocations are possible.

In cooperation with the University of Cape Town a detailed research on available secondary data and, if possible, raw data was conducted. Literature and secondary data from Cape Town/ South Africa and Freiburg/ Germany were exchanged with the colleagues from the University of Cape Town with the help of a dropbox. General reports about babies, children and maternal health were analysed and indicators for mother-child health evaluated (Saving babies 2014; Stephen & Bamford eds., 2013; Pattinson et al., 2012). In general the analysis revealed that only few data on mother and child health exist for the proposed indicators e.g. maternal mortality rate, infant mortality rate, children mortality rate, causes of deaths, etc. Detailed information for children and their mothers, which could reflect the influences of maternal health on children health and vice versa, are hardly available. In addition, an issue is the level of aggregation. Most data (secondary and raw data) exist for the whole country of South Africa or for the province of Western Cape. Partly information and data for the City of Cape Town are available but nevertheless barely information for the health districts of Cape Town is accessible. An accessible data source for raw data is the Date First Data Portal which is a South African service which makes South African survey data available to researchers. Fortunately this database includes data of the Cape Area Panel Study (CAPS) which is a longitudinal study of the lives of adolescents and young adults in Cape Town. The study contains information on living conditions, education, immunization, age, sex and even anthropometric measurements (body height, body weight, waist circumference, head circumference, birth length and birth weight). Furthermore, the study includes information on the mothers of the surveyed children and young adults. Therefore it is a promising starting point for further analysis of mother and child health although the information on health districts is missing. In a first step the datasets need to be merged using the ID coding variables for children and mothers to be prepared for further analysis. In addition a first set of growth charts for children and adolescents was developed which is very important, as growth references for the South African population do not exist.
Furthermore, the only information which is available on health district aggregation level is detailed mortality data of the population. Thanks to the work of our partners at the University of Cape Town raw data from the Western Cape Mortality Profile

(Groenewald, 2014) were accessible which will be the basis for the development of mortality rates and life expectancies of men and women over all age groups.
In addition a proposal for access to data of the Demographic and Health Survey (2013) conducted by the Department of Health (South Africa) was submitted as this survey contains several information on mother and children and even on anthropometric measurements. Furthermore, access to other databases will be provided and applied for by the colleagues at the University of Cape Town for South African data and by the Freiburg group for German data sets.
All the information on different databases, surveys and raw data was collected in a close contact via email and skype with all participants.
Additionally a literature research on growth charts was conducted. Literature dealing with the collective term ‘growth data’ was stored in the literature database and organized by establishing a summary table. The following information was collected from each paper:

author(s)
year of publishing
name of the paper sampled data
sampling location (area, city)
participant’s age
participant’s ethnos
number of participants
measurements used classification stages
entity in charge of data collection
journal
reference to other publications

With the ‘sampled data’ category being the most important category, great emphasis was taken on filtering out as many useful keywords as possible. This includes actual body weight, body height and head circumference measurements, diseases like overweight and obesity, growth retardation, high blood pressure and cardiovascular diseases which can be the result of an unhealthy weight to height ratio. Data about low birth weight, neonatal deaths, fetal alcohol syndrome and other disorders was also of interest. Thereby alcohol and drug consumption of the mother during and after

the pregnancy was also recognized in the studies. Additionally ethnicity of the children and mothers as well as living area (city, semirural, rural) were documented and checked for differences. The complete list of keywords can be found in the appendix “Biological Anthropology”. Regarding the adolescent maturation the Tanner stages (Tanner 1962), if not stated otherwise, were used for classification.

The implementation of the “road to health card” (RTHC), a record of immunisations and growth rate, in South Africa provided a cheap, simple and practical method of monitoring child health. Additionally this RTHC provides a unique opportunity for researchers to carry out studies about children’s health status in South Africa and compare the results with the global situation (Woods 2007). The RTHC includes information about e.g. body height, body weight and immunization for children aged 0 to 5 years. This information is used to provide data for research studies (O’Connor et al. 2014; Le Roux et al. 2014; Le Roux et al. 2013; Rotheram-Borus et al. 2014; Kruger et al. 2012). However it is to be mentioned that the RTHC uses the WHO standard growth charts for the evaluation of the children’s development and growth (https://www.westerncape.gov.za/news/minister-botha-launches-road-health-booklet, access date: 11.05.2015) as no local standard for adjusting growth data is available yet.

The most important ongoing cohort-studies of South Africa are (1) the birth to ten/ twenty (in Soweto-Johannesburg, South Africa) (Richter et al. 2007), the (2) Drakenstein Child Lung Health Study (DCLHS) (Cape Town) (Richter et al. 2007; Zar et al. 2015) and the (3) Bone-Health Study (BH) (sub cohort of the Birth to Twenty (Bt20) birth cohort study) (Yach et al. 1991). With more than 5000 notified births of different ethnic groups and follow up measurements these cohorts provide a meaningful insight to the birth weight and development of South African infants and children and about the development of the national health situation over the years. Unfortunately an access to the raw data of these studies is not possible yet.

2.4 Conclusions regarding the methodological approach

The field of mother and child health is well documented for the country of South Africa. Specialized information for the city of Cape Town or even further for the health districts of Cape Town are hardly available and accessible. This affects especially the

accessibility of raw data. Furthermore, the existing raw datasets are often incomplete and not very specific. A first overview about mother and child health could be achieved, which is expected to be deepened after the approval of the submitted ethical proposal to Cape Town University will be received.

2.5 Outline of work plan for the data analysis

1. Expand the literature research on mother and child health to the specific topics revealed in the gap analysis
2. Compare the data available from Cape Town (South Africa) with Freiburg/Stuttgart (Germany)
3. Develop growth charts for children and adolescents of Cape Town and South Africa (if possible from existing and available data)
4. Compare the growth charts with international Standards (from WHO) and Germany (Kromeyer-Hauschild et al.; Rosario et al. 2010)

3. Environmental Health

3.1 Introduction to the environmental health issues

How does the quality of the environment develop in urban areas, how does it affect the health of the population? This is a question of great interest to policy makers, because they must be able to recognize emerging risks in time, must be able to monitor the emergence of possible health risks and assess the outcome of the remedial measures taken. In this respect, so-called environmental health indicators (EHIs) allow to summarize environmental health burdens to ultimately make them accessible to the different users. Environmental health means improving our health by improving our environment, i.e. improving sanitation and hygiene to help control the spread of diseases from people, animals, food, milk and water, preventing the air, food and water from becoming polluted, and preventing human exposure to pollutants. Furthermore, improving access to resources and places where we live, learn, work and play that help us thrive. In the environmental health part of the project, typical environmental health–related factors will be determined for the model city of Cape Town (South Africa). EHIs from a chosen city or country describe the state of the environment and health, and report both positive and negative trends.

Thus, the indicators provide a quick and up-to-the-minute overview of the environmental health situation in the observed region (ref.: 1-4). Development of these environmental health indicators can in the long term contribute to the design of effective intervention strategies for health-related environmental protection in the selected metropolitan areas.
For the project, around 60 indicators and additionally further main indicators of the Commission on Sustainable Development (CSN) of the United Nations (e.g. waste, social indicators) will be chosen to evaluate urban environment and health in Cape Town. Among others, the indicators will include:

- Air quality
- Indoor air quality/Housing and settlement
- Traffic and road accidents
- Noise
- Waste and contaminated areas
- Water and sanitary conditions

The question of the influence of air pollution plays a special role in health in African or Asian metropolitan areas. The high content of particulate matter (PM) in ambient air presents the biggest challenge in rapidly growing cities (Kelly 2003). The causes lie in the numerous industrial plants and power stations, but also in heavy traffic and private households. Thus, the air pollution indicator that measures particulate matter PM10 or PM 2.5 in outdoor air is accorded high priority in this project.

3.2 Methodological approach

Two general approaches were followed to collect available secondary data to determine health indicators. First, a broad internet inquiry was done by which means it is not only possible to obtain data, but also to assess how transparent the government is about providing with such important and health-relevant information. For this purpose, three main websites were found: The City of Cape Town's homepage (http://www.capetown.gov.za), the homepage of the Western Cape government (https://www.westerncape.gov.za) and of the South African government (http://www.gov.za) and that of the Department for Sanitation and Water Affairs South Africa (https://www.dwa.gov.za). "Statistics South Africa" (www.statssa.gov.za) also provides useful data. Additionally the "National Center for Biotechnology Information"

(NCBI) “PubMed” database was scanned for further publications in this context. We also searched the Census database.

The city’s homepage is very informative and information is given, among other things, on environmental health, its importance, problems, which remedial measures the city is taking and how citizens can help. (http://www.capetown.gov.za/en/CityHealth/EnviroHealth/Pages/EnvironmentalHealth.aspx). Several reports and publications on environmental status and strategy plans for improving the conditions in Cape Town are available for downloading. Comparable publications are available on a national level for South Africa and the Western Cape (https://www.westerncape.gov.za/documents/annual_reports/2014), (http://www.gov.za/document).

Air quality

The City has developed an “Air Quality Management Plan” (AQMP), which is part of the 5-year “Integrated Development Plan” (IDP) (https://www.capetown.gov.za/EN/CITYHEALTH/AIRQUALITYMANAGEMENT/Pages/AirQualityManagementPlan.aspx, http://www.capetown.gov.za/en/IDP/Pages/WhatisThe5yearPlan.aspx). The aim of the AQMP is to achieve and maintain clean air in the city over the next 10-20 years. The plan’s mission and vision are: “to be the city with the cleanest air in Africa” and “to reduce the adverse health effects of poor air quality on the citizens of Cape Town, especially during brown haze episodes” (https://www.capetown.gov.za/EN/CITYHEALTH/AIRQUALITYMANAGEMENT/Pages/AirQualityManagementPlan.aspx, Plan - Air Quality Management Plan 15 Aug 2008.pdf). One important part of the AQMP is monitoring the air quality. In Cape Town there are 14 sites, where air quality is measured (see Appendix, Figure 1)

The following pollutants are measured in the city: SO_2, NO, NO_2, NO_X, PM10, CO, O_3, Benzene and H_2S, but not everything is measured at every station (see appendix 4, Table 1). The measuring stations are in accordance with US EPA and SANAS ISO 17025 requirements (http://web1.capetown.gov.za/web1/NewCityAirpol/reports.asp: monthly and special reports). Ambient air is measured every 10 s, data are collected on a central server and exceedance of guidelines is recognized. There are two different guidelines: The UK (WHO) and National Air Quality Standard (SANS) guideline, the SANS guidelines are mostly in accordance with UK guidelines, in some cases higher, e.g. for PM10. The City of Cape Town follows the UK guidelines, but in most reports, episodes for both guidelines are shown (http://web1.capetown.gov.za/web1/NewCityAirpol/reports.asp: monthly and special reports).

A big problem in Cape Town is “brown haze” (see appendix, Figure 2), which occurs especially in winter months (March-September) due to temperature inversion and is

visible evidence of poor air quality (http://web1.capetown.gov.za/web1/NewCityAirpol/reports.asp: monthly and special reports). A study from 1997 shows, that 65 % of brown haze is attributed to vehicular emission: 49% of this is caused by diesel-vehicles, 16% by petrol driven vehicles (https://www.capetown.gov.za/en/CityHealth/AirQualityManagement/BrownHaze/Pages/BrownHazeStudy.aspx). Brown Haze consists of the primary pollutants SO_2, NO_X, H_2S, PM10 and VOC and the main sources for these pollutants are: transportation, industrial processes, fuel (wood and paraffin), windblown dust and solid waste disposal. The secondary pollutants, which originate from chemical reactions in the atmosphere among primary pollutants are O_3, PM10 and NO_2 (http://web1.capetown.gov.za/web1/NewCityAirpol/specialReports.asp, AnnualReport2008.pdf).

Most guideline exceedances are reported for PM10, especially in the city district Khayelitsha (an informal settlement, the biggest township). An additional strategy plan exists for Khayelitsha: “Khayelitsha Air Pollution Strategy” (KAPS) (https://www.capetown.gov.za/en/CityHealth/AirQualityManagement/Pages/KhayelitshaAirPollutionStrategy.aspx). The pollution mainly originates from wood and tyre burning, along with a large amount of windblown dust, due to the presence of unpaved roads and pavements (http://web1.capetown.gov.za/web1/NewCityAirpol/reports.asp: monthly and special reports). Air pollution from fires and liquor brewing drums, was also mentioned for the informal settlements.

Water and sanitation

The quality of drinking water in Cape Town is good: It has held the “Blue Drop” status, awarded by the South African government for many years (http://www.capetown.gov.za/en/achievementsandawards/Pages/CitystaffcongratulatedforachievementsinBlueGreenDropAwards.aspx). This award stands for clean and healthy drinking water and a mature water quality monitoring system (https://www.dwa.gov.za/dir_ws/dwqr/Default.asp?Pageid=25&WSACode=CPT&theyear=2011). Data on water quality are available as reports on the homepage of the Department for Water Affairs and on the city’s homepage (http://www.capetown.gov.za/en/Water/Pages/Water-quality.aspx).

Table 2 (appendix 4) shows the results for the water quality provided across the city of Cape Town for the indicated period as well as the distribution areas normally linked to the water treatment plants supplying the city. No determined data exceed the SANS 241:2011 specifications in physical, chemical and microbiological determinants.

Access to sanitation is partly problematic: in formal settlements every household has access to a toilet and a tap. Between 2007 and 2009 70% had access to “basic

sanitation level", which means: 1 toilet per 5 households, 1 tap for 25 households (https://www.capetown.gov.za/en/Pages/Documents.aspx). Since 2009 100% of the households have access to these basic levels, but there remains one problem: some of these toilets are not made to be used by many people. (https://www.capetown.gov.za/en/Water/Pages/Documents.aspx, WSDP_201011_Exec_Sum_11may10_1_print_version.pdf). The Census data also show the lack of accessibility to adequate sanitation (http://www.capetown.gov.za/en/stats/Pages/Census2011.aspx, 2011_Census_Cape_Town_Profile.pdf: see also introductory chapter: especially for Khayelitsha, see table 3). Table 3 shows, that 0, 8 % of the inhabitants in Khayelitsha have no access to piped water and 10 % no access to a toilet (http://www.capetown.gov.za/en/stats/Pages/2011-Census-Health-District-Profiles.aspx, Khayelitsha Health District.pdf).

Waste management

The main concerns are widespread dirt and litter, with resulting unhygienic conditions and risk of disease. Furthermore, the lack of waste removal services is a major problem in all areas with informal settlements (see appendix figure 3). Informal rubbish dump areas at Nonqubela K (in Khayelitsha) and Sweet Home are especially problematic.
(https://www.capetown.gov.za/en/stats/CityReports/Pages/InformalSettlements.aspx)
. For example, municipal outsourcing of solid waste collection is completely inadequate at Nonqubela K, because the contracted company does not provide the service regularly or adequately. The large unregulated dump-site is also used as a toilet area and raw sewage is exposed, also along the walk-ways. Cattle roam freely between the dump and the shacks, foraging amongst the waste; and small children wander and play along the same routes. There are some districts with no waste collection services at all. Some stagnant water bodies throughout some informal settlements during winter are also used to dump waste thus producing an additional hazard. Related problems are animal carcasses (e.g. dogs) left alone in the area as another potentially serious health hazard.

Causes of death

At the present point in time it is not possible without the current correspondent raw data to determine the causes of death in relation to environmental health indicators,

especially the correlation of possible air pollution with deaths among respiratory and cardiovascular patients. The availability of raw data proves problematic here, which is necessary to analyze the proportion of deaths, attributed to air pollution. Cape Town mortality data for the period 2001–2006 were analyzed by age, cause of death and sex (see appendix 4, table 4). HIV/AIDS, homicide, tuberculosis and road traffic injuries accounted for 44% of all premature mortality. Khayelitsha, the poorest subdistrict, had the highest levels of mortality for all main cause groups (Groenewald et al 2010).

Shortcomings

The free available literature mainly consists of reports, in some cases no raw data could be found. To determine the explicit health indicators it is indispensable to sort the raw data.

A lot of the data collected are on a national or a provincial level; often no data are available for Cape Town and especially for the distinct city districts. If data is found for city districts it is often not comparable, because studies define the respective district areas differently. However in the context of the large differences with regard to living conditions between the diverse districts, it is absolutely necessary to analyze environmental health on a city district level to obtain a realistic result.

Air pollution data is only reported monthly between 2001 and March 2013, there are no raw data available. There are no reports for noise, indoor air pollution and traffic data.

We plan to obtain further relevant data on EHIs from the on-site scientists Prof. Dr. Merle Sowman (Director of the environmental evaluation unit (EEU) and associate professor in the department of environmental and geographical sciences University of Cape Town), Prof. Dr. Dalvie Aqiel (Centre for Environmental and Occupational Health Research School of Public Health and Family Medicine Faculty of Health Sciences University of Cape Town) and Warent Smit (Air quality control of the City of Cape Town).

3.3 Conclusion regarding methodological approach

In this report, some important environmental health–related factors (EHIs) such as air pollution, sanitation and drinking water quality have been evaluated for different

districts in the City of Cape Town (South Africa). The required information for determination of these factors was collected from different sources, mainly from the City of Cape Town and other organizations. According to our results, water samples were safe in terms of physical, chemical and microbial indicators and meet the SANS drinking water guideline. But we also found some undesirable EHIs in various districts, including a high percentage of households with no access to safe and reliable drinking water, poor sanitation and undesirable collection, transportation and disposal of solid waste in informal settlements. This raises much concern about the health effects of this squalid environment, especially on children. These first EHIs provide us with a quick and up-to-the-minute overview of the environmental health situation in Cape Town. In view of the poor quality encountered in regard to parts of Cape Town's urban environment it is recommended that proper remedial action must be taken to improve the EHI in question, especially with regard to the quality of air and solid waste management, as well as accessibility to clean water.

3.4 Outline of work plan for the data analysis

Further raw data are necessary to evaluate completely the EHIs ambient air pollution and indoor air pollution. For these data the AQM team of Cape Town has to be contacted directly (air.quality@capetown.gov.za). Moreover further EHIs like transport accidents, noise and other possible environmental risk factors together with on-site scientists have to be analyzed. Therefore we contacted Prof. Dr. Merle Sowman, Prof. Dr. Dalvie Aqiel and Warent Smit and from the City of Cape Town. The objective in the next phase of the project will be the identifying of further environmental health problems and the report on priority problems (September 2015). In the next step recommendations for proper actions for the promotion of indicators will be given (January 2016).

4. Psychosomatic Medicine and Psychotherapy

4.1 Introduction to the mental health issues

The World Health Organization (2014) describes mental health as a “state of well-being in which an individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and is able to make a contribution to his or her community”. The WHO Mental Health Action Plan recognizes that mental, neurological and substance use disorders account for 13% of the total global burden of disease and promote the statement “No Health without Mental Health”. Mental disorders could cumulatively account for a loss of US$ 16.3 million between 2011 and 2030 on a global level (WHO, 2013). Concentrating on urban environment it seems that cities have both health risks and benefits, but that mental health is negatively affected (Lederbogen, 2011), showing increased risks of mental disorders for urban inhabitants. In a meta-analysis of urban–rural differences Peen (2010) found that in developed countries the pooled prevalence rates for psychiatric disorders were significantly higher in urban areas compared with rural areas. Reasons for this vulnerability might be found in the rapid sociocultural change in urban environments that overcharges the mental self-regulation (Lopez, 2006). Especially in developed countries urbanization holds health benefits as well, particularly concerning service structure. (Leon, 2008; Dye, 2008). In contrast, in many developing countries the biomedical as well as traditional health care systems in urban environments are not prepared to cope with the increased burden of stress-related disorders (WHO, 2013). Access to health care is not only determined by the financial situation, but often also depends on gender, ethnicity, age, education, and place of residence (BMZ, 2009) and this makes improving health system quality an essential part of meeting Millennium Development Goals (BMZ, 2012).

4.2 Information and justification

Neuropsychiatric disorders are ranked third in their contribution to the burden of disease in South Africa, after HIV&AIDS and other infectious diseases (Bradshaw, 2007). The high level of co-morbidity of mental disorders with infectious diseases, its association with non-communicable diseases, high levels of violence and injury, and maternal and child illness, is what the Department of Health of South Africa (2013)

calls a “quadruple disease burden”. Economically, lost earnings among adults with severe mental illness in one year amount to R28.8 billion (2.2% of GDP) and far outweighs the direct spending on mental health care (Department of Health, 2013). Mental health has evolved to be an important public health issue in South Africa (Lund, 2010) and there have been key policy and legislative developments. The White paper for the transformation of the health system from 1997, the Mental Health Care Act, no. 17, of 2002, promulgated in 2004 and South Africa’s first official mental health policy, the Mental Health Policy Framework and Strategic Plan 2013–2020 in 2013 form the legislative framework. The Mental Health Care Act is consistent with international human rights standards and sets in place mechanisms for decentralization of services, integration of mental health into general health care and the development of community-based care (Lund, 2010). The Mental Health Policy Framework is aligned to the WHO Mental Health Action and embraces task sharing and the integration of mental health into primary health care services (Marai & Petersen, 2015). Remaining challenges include, among others, under-funding and under-resourcing of mental health care, enormous inequity between provinces in the distribution of mental health services and resources, lack of public awareness of mental health and widespread stigma against those who suffer from mental illness, lack of accurate routinely collected data regarding mental health service provision, heavy reliance on psychiatric hospitals and insufficient diagnosis and treatment of common mental disorders such as depression and anxiety disorders (Department of Health, 2013).

4.3 Methodological approach

The study has a cross-sectional descriptive-exploratory design. It concentrates on the collection and analysis of available secondary data, with vision to develope a larger intervention proposal building on the results of this pilot project.

Key activities

Key activities over the first research period started with an extensive literature review of relevant publications. The scientific databases PsycINFO, Medline, PSYNDEX Plus, and Web of Science were searched to get an overview of the actual situation of mental health in South Africa. Special emphasis was put on the policy and legislative

framework for mental health in South Africa, an overview over the existing data concerning epidemiology of mental disorders, mental health service structures and the level of abstraction of this data. In addition to the database search we specifically searched for publications done by South African scientists, above all from the leading scientific partner Cape Town University. A second key activity was the identification and beginning inclusion of central stakeholders from academia, governmental and non-governmental sectors. Stakeholders were selected according to centrality in the topic and representation of the variety of the society. Two leading scientists from Cape Town University were identified and contacted: Prof. Dan Stein, Professor and Head of Department of Psychiatry and Mental Health, University of Cape Town and Prof. Crick Lund, Head of Division Public and Community Mental Health, Department of Psychiatry and Mental Health. Both showed interest in the research activities and will be kept informed of its progress. The third key activity was the joint development and implementation of the research protocol together with the research partner Faculty of Health Sciences, University of Cape Town.

4.4 Conclusions regarding methodological approach

The first major epidemiological study with a representative sample of South African adults that shows the prevalence, severity, correlates and treatment of mental disorders in sub-Saharan Africa is the South Africa Stress and Health (SASH) study. The 12-month prevalence for any disorder was 16.5% of adults (Williams, 2008), 17% of children and adolescents (Kleintjes, 2006 in a review only including Western Cape) and the lifetime prevalence for any disorder was 30.3%, (Herman, 2009). Major depressive disorder, agoraphobia, and alcohol abuse were the most prevalent 12-month disorders, following the classification by the Diagnostic and Statistical Manual of Mental Disorders, Version IV (DSM-IV) and assessed with the WHO Composite International Diagnostic Interview Version 3.0 (CIDI 3.0) . The most prevalent class of disorders was anxiety disorders, followed by substance disorders. Some 26.2% of respondents with a 12-month disorder were classified as serious, 31.1% moderate and the remaining 42.7% mild. A high number of South Africans are dependent on the public health sector service (87.7%) (Seedat, 2008). South Africa's nine provinces form the major organizational structure for service delivery, with plans and budget allocations to health (and mental health) services occurring at provincial

level. Mental health services are organized in terms of catchment areas in all provinces (Lund, 2010). It is estimated that 2.5% of total health expenditure and 4.2% of hospital expenditure were devoted to mental health in 1996 and that of the total mental health expenditure 86% is allocated to mental hospitals (Lund, 2010). Per 100,000 population, there are 2.8 beds (provincial range 0–7.0) in psychiatric inpatient units in general hospitals, 3.6 beds (0–6.4) in community residential facilities, 18 beds (7.1–39.1) in mental hospitals, and 3.5 beds (0–5.5) in forensic facilities (see appendix, Mental health facilities per province in South Africa by 2005). In total, there are 3,460 outpatient facilities which offer mental health services, 80 day treatment facilities, 41 psychiatric inpatient units in general hospitals, 63 community residential facilities and 23 mental hospitals in the country. The total personnel working in mental health facilities are 11.95 per 100,000 population. Of these, 0.28 per 100,000 are psychiatrists, 0.45 other medical doctors (not specialized in psychiatry), 10.08 nurses, 0.32 psychologists, 0.40 social workers, 0.13 occupational therapists, and 0.28 other health or mental health workers (Lund, 2010). There is a wide variation between provinces in the level of mental health service resources, and provision and an overemphasis on hospital-based treatment, given that these institutions are often inefficient, geographically inaccessible and frequently stigmatizing (Lund, 2010; Seedat, 2008). South Africa's policy and legislations clearly contain the integration of mental health into primary health care (PHC) and some progress has been made in this regard. Most provincial services endorse the importance of integrating mental health into PHC, and some training initiatives have been undertaken for PHC nurses (Department of Health, 2013). But there still is an urgent need for mental health training of general health staff. At the District level, the integration of mental health care into primary health care is focused on the emergency management and ongoing psychopharmacological care of patients with chronic stabilized mental disorders. More common mental health problems such as mood and anxiety disorders are generally not identified or treated (Petersen 2009). Treatment and service use of mental health services in South Africa is quite low, with an overall 15.4% (25.5% of participants with a 12-month DSM-IV disorder and 13.4% with no disorder). The most common treatment provider was general medical provider (16.6%), followed by human services provider (6.6%), complementary and alternative medical provider (5.9%), psychiatrist (3.8%), and non-psychiatrist mental health specialist (2.9%). The mean number of visits was 4.6 per person per year

(Seedat, 2008). 9% of adults are consulting traditional healers and 11% are consulting religious or spiritual advisor for their mental health care needs (Sorsdahl, 2012). Interestingly and differing to most other countries where similar studies were conducted, health treatment seems not to be influenced by sociodemographic factors thus indicating similar barriers to obtaining treatment (Williams, 2008). Low mental health literacy could be one of the most significant barriers to accessing mental health care and stigma of people with mental disorders another impeding factor (Sorsdahl, 2012). Regarding the overarching topic of urban health, there seems to be mixed evidence. Whereas Williams (2008) found no urban *versus* rural variations in mental health risk, Seedat (2009) found that urban location is associated with a lifetime anxiety disorder diagnosis and that lifetime intermittent explosive disorder can be predicted, among other factors, by living in an urban rather than a rural area. Herman (2009) found impressive geographical differences in 12-month and lifetime prevalence of mental disorder rates across provinces. Urban regions such as Western Cape showed the highest prevalence of common mental disorders and rural provinces like Eastern Cape the lowest. Andersson (2013) found a trend of geographical differences in rates of perceived need to seek help for emotional troubles with men living in urban/semi-urban areas reporting 94.8% versus men living in rural/semi-rural areas reporting 82.4% (p-0.051). With respect to service structures the pictures seems clearer, as there are huge disparities in mental health services between provinces and rural areas being particularly underserved (Petersen, 2012; Lund, 2010; Seedat, 2008). Mental health personnel is also disproportionally located in urban areas (Williams, 2008), in Free State and North West the density of psychiatrists in or around the largest city is 3.6 times greater than the density of psychiatrists in the entire province (Lund, 2010).

Key challenges

There seems to be a striking shortage on available data on mental health service structures. This includes reliable, routinely collected data that can be used to plan services and address current inequalities, service utilization data by diagnosis on provincial level (Lund, 2010). It also includes data on how well policy, legislation and related norms and standards have been implemented, and on the access to or quality of mental health care at district level (Petersen, 2009). It furthermore concerns data

on human resources availability and qualification such as percentage of PHC doctors and nurses who have received training in mental health (Lund, 2010). Until 2013 there was only one indicator for mental health on the District Health Information System, namely the number of mental health visits. From 2013 on it was planned to integrate national mental health indicators into this system (Department of Health, 2013). There is an urgent need to improve the collection of routine data on mental health service provision (Day & Gray, 2014).

Policy and legislative framework has made promising developments and mental health is on the agenda in South Africa (Lund, 2010). There is wide variation between provinces in the availability of service resources for mental health and mental health services heavily rely on psychiatric hospitals (Lund, 2010). There seems to be an astonishing treatment gap of 75% for common mental disorders in South Africa (Seedat, 2008). Progress has been made in deinstitutionalizing and integrating mental health care into the primary health care system which seems to provide a great number of advantages (Lund, 2010). Task shifting or task sharing is an interesting approach to compensate for the scarcity of mental health specialists and facilitate scaling up of health services at minimal cost (Petersen, 2012). Taking into account the socio-cultural context is of utmost importance, all the more community-based services are being strengthened (Mendenhall, 2014). There is still an urgent need for mental health training of general health staff (Department of Health, 2013).

4.5 Outline of work plan for the data analysis

Research questions / aims

Research questions are to describe the availability, accessibility and acceptability of mental health services in Cape Town, South Africa and to identify gaps in mental health care provision needed for designing successful interventions (gap analysis).

Methods

One key activity of the first phase was to get an overview over the existing data concerning epidemiology of mental disorders and mental health service structures and the level of abstraction of this data in South Africa. As there is scarcity of data to be found on city and district level, the first key activity of the second phase will be to

gain access to raw data on these levels of abstraction. For that we will try to gain access to data from the South Africa Stress and Health (SASH) study and the District Health Information System (DHIS) by contacting the persons and institutions responsible. This search will be complemented in a second key activity by direct contact to mental health professionals in Cape Town. A list of stakeholders from academia, governmental and non-governmental sectors is as follows:

- School of Public Health, University of Cape Town
- Department of Psychiatry and Mental Health, University of Cape Town
- Division Public and Community Mental Health, University of Cape Town
- School of Psychology, Stellenbosch University
- Department of Health
- Programme for Improving Mental health care (PRIME)
- Africa Focus on Intervention Research for Mental health (AFFIRM)
- Alan J Flisher Centre for Public Mental Health (CPMH)
- Perinatal Mental Health Project (PMHP)
- South African Federation for Mental Health (SAFMH), a national non-governmental organization

A third key activity will be a trip to South Africa in July 2015 for meeting with key stakeholders and connecting our research activities, gathering necessary data and a joint identification of gaps in mental health care provision. The fourth key activity will be the participation in the third Pan-University Network for Global Health meeting to be held at the University of Cape Town on 12-13 October 2015 and the fifth the elaboration of the interdisciplinary intervention study.

5. Palliative Care

5.1 Introduction to the Palliative Care issues

Since its onset, palliative care (PC) has been viewed as a global challenge, particularly by institutions such as the WHO (WHO, 2007). Notably, current international initiatives work towards a recognition of PC as a human right (Radbruch, 2013).

As a result of such tendencies, initiatives have been started to improve the global availability of morphine, basic medical infrastructure and the integration of PC into the

training and education of health care professionals. The latter is of utmost importance, since PC is an approach and delivered as primary PC by all physicians, nurses and other health care specialists in different fields (e.g.: as family doctors or nursing services). In addition to primary PC, the development and provision of specialized palliative care (SPC) and hospice services is being promoted (Radbruch, 2013). SPC and hospice services may include the PC inpatient units, PC consultation services and outpatient clinics, inpatient hospices, as well as home care hospice and palliative home care teams.

In addition to reducing pain and suffering, PC may have positive effects on the costs of health care (Tangeman, 2014; Morrison, 2008). Findings suggest that the adequate provision of PC and hospice services can help reduce the number of hospital visits and excessive, futile therapies (Jox, 2014). The financial benefit of PC is also important for the affected patients themselves (and their families), because they are often burdened by the costs of disease-modifying therapy (Smith, 2014; Essue, 2013).

5.2 Information and justification

Experts from various cultures and continents have repeatedly identified similar barriers to the provision of adequate PC (Keim-Malpass, 2015; Miyashita, 2007; Reville, 2014; Macaden, 2014; Grant, 2011). Typically inadequate availability of specialized health care structures such as PC units and hospices but also cultural and personal barriers have been identified. The latter are for example a lack of openness towards the topic of death and dying among health care professionals and insufficient information about the basic elements of PC (Lynch, 2013; Al-Kindi, 2013; Kang, 2013). Studies investigating the varying availability of PC services on a global level have been conducted by the WHO and other organizations such as the European Association of Palliative Care (EAPC) in the context of the “World Palliative Care Alliance (WPCA)” (Murray, 2014). However, despite the global trend toward urbanization (Lin, 2013) which is highly relevant to social and healthcare politics, no study has been conducted to investigate the availability of PC services from an “urban health” perspective. Moreover, there is a lack of research on specific challenges and barriers but also unique opportunities for PC in an urban environment.

Objectives

The objective of the first project phase is to assess the available information on PC in Cape Town and, if possible, specifically in the three study districts which will prospectively comprise two townships with mainly low income inhabitants and one wealthier district to highlight differences and constants in PC forms and service structure in different socio-economic environments. With the help of local stakeholders, forms of caring for the dying which may differ from European PC structures and institutions will be made visible.

5.3 Methodological approach

The MedLine search via PubMed (see appendix 6: Palliative Care, Table 1: Matrix of MedLine search and Table 2: Results of MedLine search via PubMed) yielded the following four potential stakeholders:

- Lindsay Farrant, Palliative Medicine Unit, School of Public Health and Family Medicine, University of Cape Town
- Colleen Dempers, Hospice Palliative Care Association of South Africa, Cape Town, South Africa
- Dr. Liz Gwyther, Hospice Palliative Care Association South Africa, and School of Public Health & Family Medicine, Faculty of Health Sciences, University of Cape Town, West Cape Town, South Africa
- M. Hosking, St Luke's Hospice, Cape Town, South Africa

An in-depth research revealed that Dr. Liz Gwyther would be exceedingly desirable to cooperate with, because she holds the following positions:

- University of Cape Town: Senior lecturer, head of PC Team, convener of MPhil and Postgraduate Diploma in Palliative Medicine and responsible for research supervision and support for publications of the postgraduate students
- Chief Executive Officer (CEO) of the Hospice Palliative Care Association of South Africa (HPCA)
- Incoming chair of the Worldwide Hospice Palliative Care Alliance (WPCA)
- Director of: the African Palliative Care Association, ehospice, the Pain Society of South Africa
- Member of the WHO ad-hoc Technical Advisory Group for palliative and long-term care.

Her readiness to participate in the project will be inquired by Tolullah Oni, the local overhead project coordinator in Cape Town.

The secondary data made available by our partners in Cape Town seems to provide useful socioeconomic and demographic background information. Also the information concerning age distribution, education and mortality rates will be helpful to outline the context in which our further research is conducted. However, there seems to be no secondary data available that could provide an overview over services and availability of palliative care in the different districts or even on the level of Cape Town.

The list of institutions and services in PC in Cape Town which resulted from the online research serves as a first orientation on the availability of PC services in the city and helps to identify institutions which can later on be asked to participate in the survey. The mapping of the existing infrastructure (hospices, nursing homes, charity welfare organizations, physician boards, and community health departments) will be completed with the help of a local research partner.

5.4 Conclusions regarding methodological approach

In this phase of the project, we successfully identified a number of stakeholders and an extremely apt potential research partner in Cape Town. Furthermore, the inventory of available secondary data was screened which showed a significant information gap concerning available PC infrastructure. A first overview of institutions and protagonists in PC in Cape Town was compiled. To avoid a Eurocentric look on care for the dying and to identify and respect culture-specific issues of PC, we are looking forward to include the valuable expertise of our local research partners and the information gathered in interviews with local stakeholders.

5.5 Outline of work plan for the data analysis

Objectives

General: To identify unique requirements, potential and challenges of PC in the three socio-demographically distinct districts of Cape Town (Khayelitsha being the first township named for the closer selection) and initiate a transdisciplinary and international communication process between our working group and local partners to develop suggestions for further advancement of PC.

Specific: To (i) acquire basic information about the level of primary and specialist PC offered in the partner regions, (ii) identify the missing information about the infrastructure in these districts (gap analysis) and (iii) gather stakeholder suggestions concerning strategies of how to overcome barriers to improve PC in their region.

Methods

Based on the results of the first project phase, a cross-sectional study with a descriptive-explorative design will be performed together with the identified partners in Cape Town. Community, health care, and policy stakeholders will be approached to provide their knowledge about available PC infrastructure and their perception of unique aspects and understandings of PC from the South African and urban view. Furthermore they will be asked to name specific deficits of PC services, barriers to the access of PC and missed opportunities as well as suggestions for improvement of the current situation. This information will be obtained either via an online-, paper- or telephone survey, depending on the participants' priorities. The already existing preliminary survey (outline see Appendix 6: Palliative Care, Table 5) will be piloted with our local research partner and a limited number of stakeholders in order to adapt and refine the questions according to the local circumstances and concepts in PC. After that, the survey will be carried out with a maximum of 25 participants. If more than 25 stakeholders will be identified, a ratio of 50/50 physician and nursing work versus social work and spiritual care professionals is the aim. At least five non-health care professionals (e.g. politicians, members of non-governmental-organizations (NGOs)) will be asked to participate.

The data will be evaluated and discussed with a panel of local key stakeholders prior to the preparation of a publication that will suggest the most critical and valuable issues that need to be addressed in the different districts.

Perspective

The project aims to initiate a joint transdisciplinary, multidisciplinary, and international process to model societal, policy and health care approaches to advance PC in urban environments.

For detailed timetable and deliverables see Appendix 6: Palliative Care, Table 4.

6. Medical Sociology and Psychology: Quality Assurance

6.1 Introduction to the Medical Sociology and Psychology issues

Interdisciplinary research carried out by researchers with diverse background offers the opportunity to develop holistic results with a wide range of prospects for practical implications. However, roles and aims of each discipline need to be clarified and a common framework has to be developed in order to carry out expedient research activities.

6.2 Background information and justification

Collaborative research projects by multidisciplinary teams are most effective when supported in the development of common goals and shared visions (Choi & Pak, 2007). The staff of Medical Psychology and Sociology (MPS) has an outstanding experience in social science concepts and methods to investigate determinants of health, health services, and the context factors for many years. There is a large body of knowledge for the selection of social science methods and the coordination of data collection in health care. Furthermore, many projects focusing on interdisciplinary collaboration have been run successfully, which can be helpful for the integration of the different disciplines in the project and the model development.

The aim of the horizontal project located in MPS is to have a centralized unit for methodological model development support for the center of medicine and society with the four projects to the issue “Global Urban Health-Gap Analysis”.

6.3 Methodological approach

To ensure high methodological standards, we provided support on matters of model development(s), planning of studies, data collection, and data analysis for the respective sub-projects. Besides the quality assurance of the research proposals we reviewed that the same ethical standards are applied to all sub-projects by working on the protocol for the Ethical commissions. Furthermore the staff of MPS supported the development of the conceptual framework of the multidisciplinary research project in Cape Town, South Africa.

During the planning phase of the gap analysis, a checklist defining all relevant aspects to be included in the research protocols of the sub-projects has been

proposed in close cooperation with the administrative coordinator Dr. Sonia Diaz-Monsalve. This checklist delineates the basis for achieving consistent and high quality research protocols that in turn can ensure target-oriented research activities and data collection processes. The following steps are a review of data collection instruments, implementation plans and analysis of data.

6.4 Conclusions regarding methodological approach

The MPS research team contributed significantly to the quality assurance of the here presented project. The team reviewed the respective research methods and aims, supported the development of a common framework and supervised that the same aspects with regard to content and form are applied for all subprojects. Thus, the MPS research team will play an essential role regarding both the methodological and general quality of the up-coming gap-analysis.

6.5 Outline of work plan for the data analysis

Once the investigations have started, the horizontal project will continue to carry out its advisory function by continuously being a contact point for methodological questions and advice. Furthermore, we will collaborate with the administrative coordinator in developing a corporate structure for the deliverables.

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List of Appendices

1. Coordination

Table 1: Focal Points in Freiburg

Discipline	Name	Position	Contact Details
Coordination			
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Discipline	Name	Position	Contact Details
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Environmental Medicine			
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Discipline	Name	Position	Contact Details
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WHAT ARE OUR OBJECTIVES?

The aim of this research study is:

To conduct in a partnership framework including interdisciplinary teams from Cape Town, Freiburg and Penn State Universities an analysis

of the existing information in Cape Town on major urban health risk factors and on the spatial distribution of morbidity and mortality particularly –but not only- related to mother-child health with a view to identifying and informing targeted intersectoral interventions to improve health and living in urban areas.

Specific Objectives:

1. Assess the Cape Town mother-child relevant data that is available
2. Explore the association between health outcomes and upstream health determinants and compare these with provincial / city priority areas
3. Assess data on environmental risk factors available in Cape Town and explore their relationship with population health (morbidity and mortality data) with a view to informing intervention projects using environmental heath indicators
4. Describe the availability, accessibility and acceptability of mental health services and identify gaps in mental care provision needed for designing successful interventions
5. Collect existing information about primary and specialist palliative care services in Cape Town and identify information gaps
6. Conduct a targeted literature review of a) community-based mother-child health interventions with a focus on diarrhea and b) mental health services and palliative care services in Cape Town

Albert-Ludwigs-Universität Freiburg

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URBAN HEALTH - URBAN LIVING

Albert-Ludwigs-Universität Freiburg

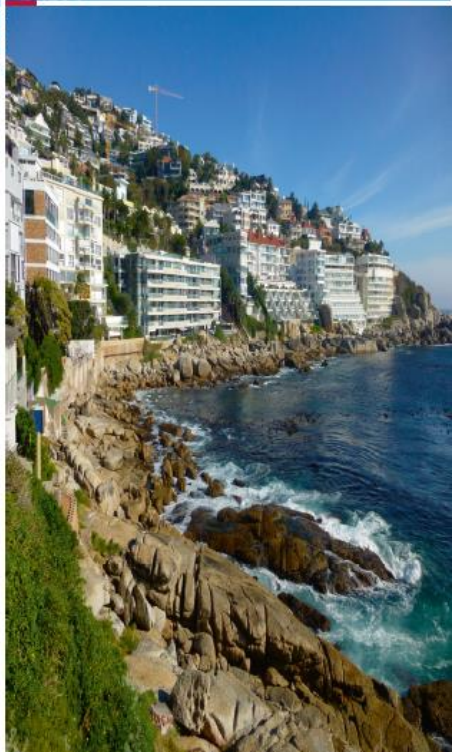

Figure 1: ZMG Research Flyer, page 1

An interdisciplinary Research Project in Cape Town, South Africa

INTRODUCTION

In the context of the rapid urbanization worldwide the task of improving urban health is of increasing importance, requiring a multidisciplinary approach. The Global Urban Health Project is based on interdisciplinary research of determinants and geographical disparities of health and disease as well as on accessibility to medical care and environmental protection in urban settings. A comprehensive understanding of key issues is needed, adding aspects of social learning for the

design and implementation of improved prevention strategies, communication between stakeholders and researchers, politics and health economics in urban areas.

Our Research Focus integrates bio-psycho-social concepts of health incorporating physical, sociocultural and environmental factors with a focus on specific urban

health risks and problems, such as the raising prevelance of non-communicable diseases.

We aim to develop models for improving health of disadvantaged population groups and reducing disparities and health risks.

Due to existing partnerships and a series of discussions at two meetings in Pennsylvania/ USA and Freiburg/ Germany, Cape Town has been selected as the model city for implementing the here presented interdisciplinary research project.

THE CENTRE FOR MEDICINE AND SOCIETY (ZMG)

The Centre for Medicine and Society was founded in November 2014 to combine and foster the cooperation between lifesciences and social sciences. It is assumed that interdisciplinary research including natural sciences, human disciplines and social sciences is required to analyze and respond to the health needs of urban populations particularly in low and middle income countries. The faculties of Environmental Medicine, Mental Health, Biological Anthropology, Palliative Care and Medical Sociology and Psychology are embarking on an interdisciplinary approach to explore determinants and spatial disparities of health and disease.

Our mission is to contribute to improving the health situation in resource poor countries through research and training.

The faculties of Environmental Medicine, Mental Health, Biological Anthropology, Palliative Care and Medical Sociology and Psychology are embarking on an interdisciplinary approach to explore determinants and spatial disparities of health and disease.
In cooperation with global organizations (such as WHO) the focus is on disease-causing ecological-biological, social and psychological factors in

urban settings and on options for improved access to health care. This approach is embedded in the overall general aim of Global Health efforts to improve health by reducing disparities and health risks at local, national and international level.

OUR COLLABORATING PARTNERS:

Faculty of Health Sciences (Cape Town, South Africa)

The Faculty of Health Sciences at the University of Cape Town (UCT) is the oldest medical school in Southern Africa. Their focus is on research in medical and allied fields as well as teaching students over a wide range of healthcare related disciplines. Their goal is to respond to the health care needs of South Africa, to produce and support health practitioners and scientists capable of addressing health need, to promote a spirit of enquiry and contribute to global health equity.

Pennsylvania State University (Pennsylavania, USA)

The Department of Biobehavioral Health at Pennsylvania State University is an innovative interdisciplinary program that enables to explore all factors—biological, behavioral, social/cultural, and environmental—that influence the health of individuals and groups through the life span.

The Department of Health Policy and Administration apply their expertise to consequential research to improve health and preparing the next generation of health services managers, policymakers, researchers, and scholars.

Figure 2: ZMG Research Flyer, page 2

ZMG – Global Health: An Interdisciplinary Agenda

Albert-Ludwigs-Universität Freiburg

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About ZMG – What do we do?

The Centre for Medicine and Society (ZMG) is working in the field of Global Health with a special focus on urban health aspects. The aim is to provide a comprehensive and multidimensional view of health and risk factors. Environmental Medicine, Psychosomatic Medicine and Psychotherapy, Biological Anthropology, Palliative Care, Medical Sociology and Psychology in Freiburg/ Germany are embarking on an **interdisciplinary** approach to explore determinants and spatial disparities of health and disease. In cooperation with global organizations (such as WHO) and other international partners like University of Cape Town, South Africa and Pennsylvania State University, USA the focus is on disease-causing ecological-biological, social and psychological factors in urban settings and on options for improved access to health care. To reach our aims and mission (see Figure) we are working in two main areas: **Training** and **Research**.

Our mission is to contribute to improve the health situation in resource poor countries through research and training

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- Offering traning and research on Global Health
- Assessing health and social services in urban areas
- Analyzing risks factors in urban settings (social behavioral, mental, economic, ecological)
- Providing policy proposals to improve health of vulnerable populations

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Training

The center is building on four years experience obtained in the interdisciplinary course on "Global Health" for students from all faculties, where health and health service problems, as well as social, psychological and environmental determinants of health are being explored. So far, around 100 students participated in this course.

ZMG is now embarking on a postgraduate master program "Global Urban Health", which is expected to start in 2016. The master course includes inter-disciplinary approaches with inputs from several faculties of Freiburg University and external lecturers.

Research

In cooperation with Cape Town/ South Africa and Pennsylvania State University/ USA, the ZMG is currently working on the project "URBAN HEALTH - URBAN LIVING- An interdisciplinary research project". The aim is to design new strategies for improved health and better living conditions in urban areas.

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Figure 3: ZMG Poster

2. Introductory Chapter – A working paper

2.1 City of Cape Town: Summary of characteristics

As an interdisciplinary project all disciplines need basic information about the City of Cape Town. Therefore the following working paper was written by a research associate to present the main characteristics e.g. some general information on demography, health situation, infrastructure etc. to all focal points. In addition the availability of this (raw) data and the levels of disaggregation were summarized. The existing tables and figures were presented in exactly the form in which they can be accessed in the different sources to show the quality of the data. To respect the interdisciplinary approach further readings are mentioned as hyperlinks so that additional research on specific information needed by each discipline is easily possible.

2.1.1 General context

Geographical position

The City of Cape Town (33°55′31″S 18°25′26″E) is the second most populous urban area of South Africa. It is the legislative capital of South Africa and the capital of the province Western Cape.

The city is located in the south of South Africa at the Atlantic Ocean and has coastline of 294 km (Census 2011).

It is a metropolitan municipality which governs the City of Cape Town and its suburbs and exurbs. A metropolitan municipality is a municipality which executes all the functions of a local government for a city. In South Africa, eight metropolitan municipalities exist.

Climate

The climate of Cape Town is influenced by the Atlantic Ocean. Therefore Cape Town has a Mediterranean climate. The hot, sunny and dry summers (December to February) have an average temperature of around 26 °C. In autumns (March to May) drizzle and little winds occur and the temperatures range between 13°C and 20°C. The winters (June to August) are the rainiest time of the year with an average of 12 rainy days per month and an average rainfall of between 82 and 93mm. The temperatures range between 7°C and 18°C. Milder weather occurs in springs (September to November). This season is characterized by green vegetation and an average temperature of 9°C to 24°C.
(Source: https://www.capetown.gov.za/en/visitcapetown/Pages/Weather.aspx)

Political-administrative information

The legislative body which is responsible for the government of Cape Town is the City Council. It adopts and implements local laws for Cape Town, so called “by-laws”. It also regulates tariffs for rates/services, regulates the city’s budget, debates about local government issues and problems. It further ratifies or rejects proposals and disposes the city’s capital assets. The City Council comprises 221 councillors. They provide a vital link between the communities they serve and the city. They are elected to serve five years. The structure of the City Council is shown in figure 1.

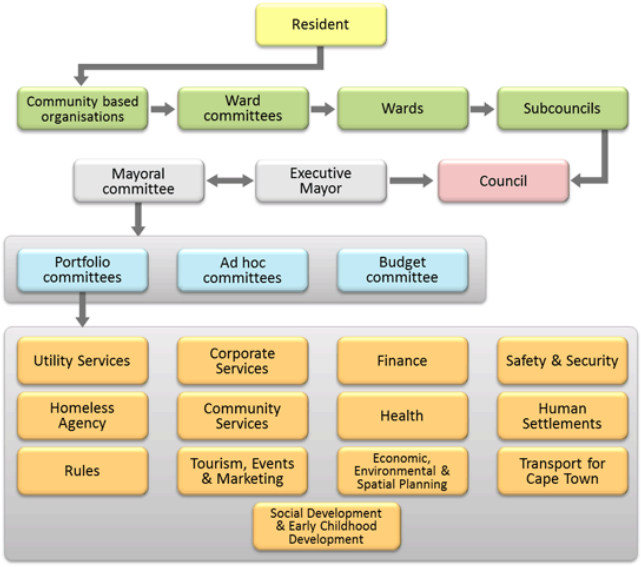


Figure 1 Structure of local government of the City of Cape Town

The executive structures of the city consist of an Executive Mayor, the Mayoral Committee and the Executive Management Team (figure 2). The Executive Mayor (Patricia de Lille; stand: 30.04.2015) is the head of the local government in Cape Town. He or she is elected by the City Council to serve five years. The City's Mayoral Committee is a group of 11 councillors that function as a local cabinet. The City administration is led by the City Manager (Achmat Ebrahim¸; stand: 30.04.2015), supported by an Executive Management Team.
(Source:
http://www.capetown.gov.za/en/stats/CityReports/Documents/CoCT_Councillor_handbook_v3.pdf)

The City of Cape Town is subdivided in different disaggregation. The smallest areas are wards (111 wards). Neighbouring wards are grouped together in clusters called sub councils (24 sub councils). These are grouped together in eight planning districts. Besides the planning districts eight health districts exist. The different forms of districts overlap but are not exactly the same (Figure 3 and 4). For official investigations e.g. the Census 2011 (by Statistics South Africa) Cape Town is subdivided into 190 suburbs.

Figure 2 The political structures of Cape Town
(from:
http://www.capetown.gov.za/en/stats/CityReports/Documents/CoCT_Councillor_handbook_v3.pdf)

Infrastructure

The infrastructure of Cape Town, especially the public transport, is managed and controlled by “Transport for Cape Town”. Cape Town is said to be ‘easy to navigate’ whether by car, bus, taxi, rail, bicycle or on foot.

In public transport three major public transport operators connect the different parts of the city: MyCiTi (figure 4), Golden Arrow Bus Service and Metro Rail (figure 3)

MyCiTi offers 28 bus lines through Cape Town, mostly in the east of the city. Golden Arrow Bus Service enlarges the public transport to other parts of Cape Town. Last but not least, the trains of Metro Rail connect the districts of Cape Town with each other and the city of Western Cape in the closest vicinity. Metered taxis and Minibus taxis complete the motorized public transport of the city.

Cape Town is also a bicycle and pedestrian friendly city with a large network of bicycle lanes and walkways.
(see: http://capetownbicyclemap.co.za/).

With 15 international airlines operating at Cape Town International Airport (89 direct international flights per week) the capital of Western Cape is in great interaction with the whole world. The second biggest airport of South Africa also has domestic terminals and all South African airlines fly to Cape Town.
(source:
https://www.capetown.gov.za/en/visitcapetown/Documents/TEAM_CapeTownInternationalAirportFacts.pdf)

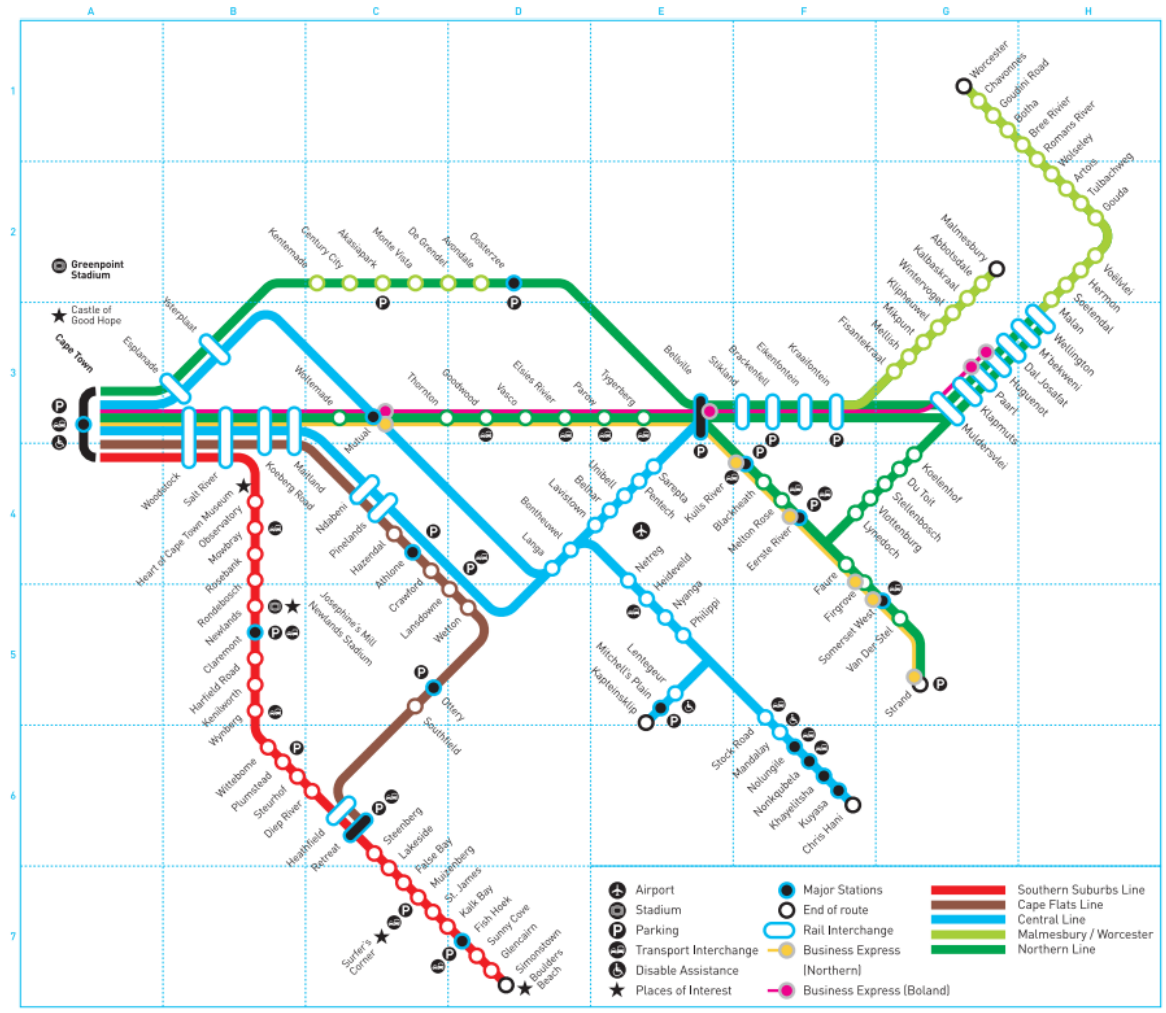


Figure 3 Routes of Metro Rail in Cape Town and Western Cape (from: http://www.metrorail.co.za/maps/CT_RailMap.pdf)

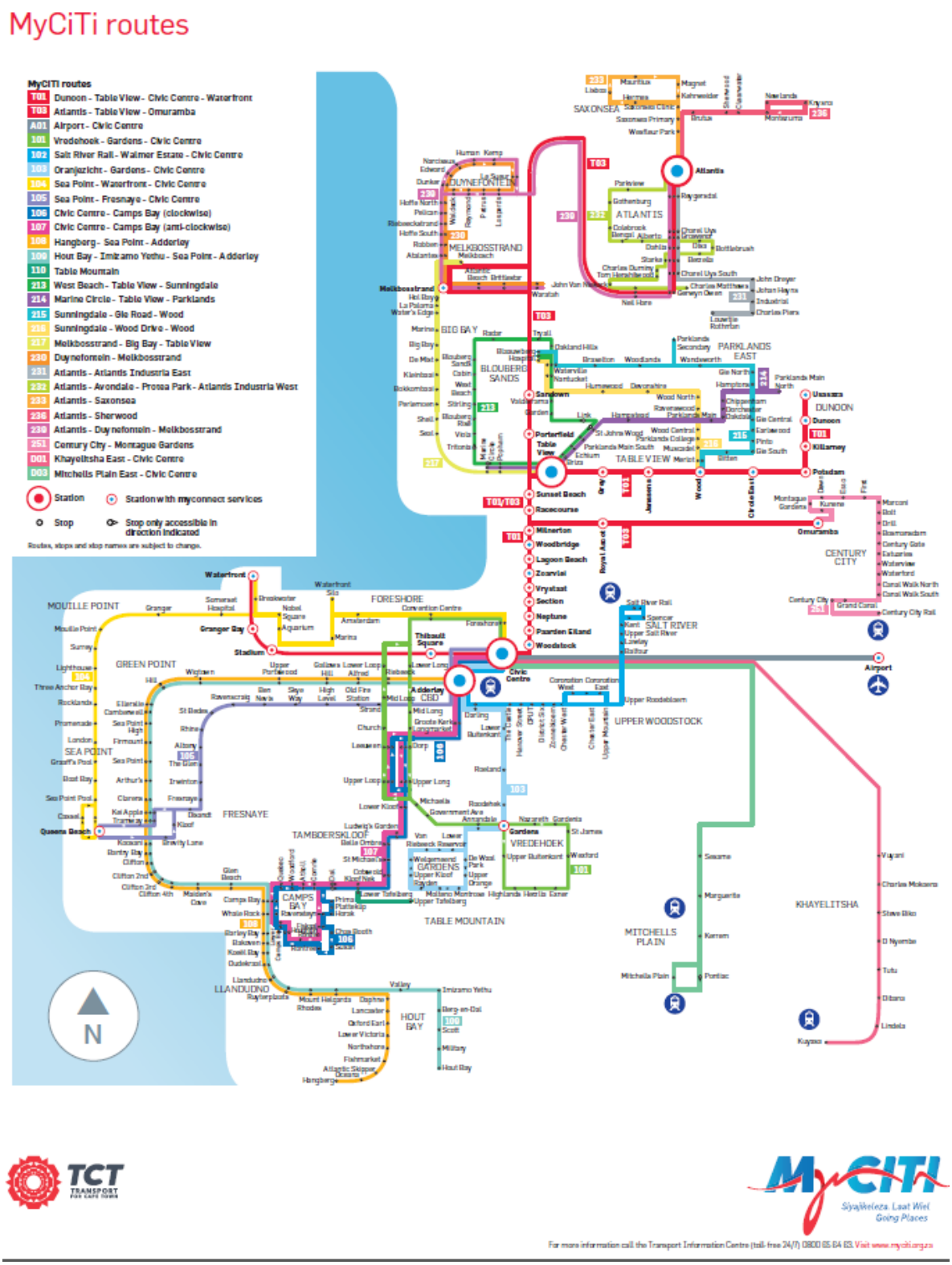


Figure 4 Route of My CiTi Bus Service in Cape Town (from: http://myciti.org.za/docs/697/MyCiTi%20system%20map%20-%2019%20February%202015.pdf)

2.1.2 Demographic information: (*Census 2011-Cape Town*)

The City of Cape Town has an area of 2 461 km² and a population of 3 740 025 people. The population density is 1519.7 people per km². All in all 1 068 572 households with an average household size of 3.5 exist. “A household is defined as a group of persons who live together, and provide themselves jointly with food or other essentials for living, or a single person who lives alone.” (Statistics South Africa) The annual growth rate is 3%.

The demographic information about South Africa is based on the census which is conducted in frequent intervals. The last census took place in 2011. Due to the data of the census a lot of information is available on provincial level but only partly for the City of Cape Town.

ONLY the following information (Table 1) from the census in 2011 exist on health district, sub council and even ward level (see: https://www.capetown.gov.za/en/stats/Pages/Census2011.aspx):

Table 1 Available information from the census (2011) on health district level

Demographic	**Socio-economic (see also section 1.3)**	**Households (see also section 1.3)**
total population	education (by ethnic group)	access to piped water (by ethnic group)
male/female ratio	employment (by ethnic group)	toilet facility (by ethnic group)
age distribution	income (by ethnic group)	refuse disposal (by ethnic group
population pyramid	housing/dwelling (by ethnic group)	energy used for lightning (by ethnic group)
ethnic groups	tenure status (by ethnic group)	energy used for cooking (by ethnic group)
area		energy used for heating (by ethnic group)

Table 2 shows the key statistics and table 1 the general demographic information about the City of Cape Town.
(source: http://www.statssa.gov.za/?page_id=1021&id=city-of-cape-town-municipality)

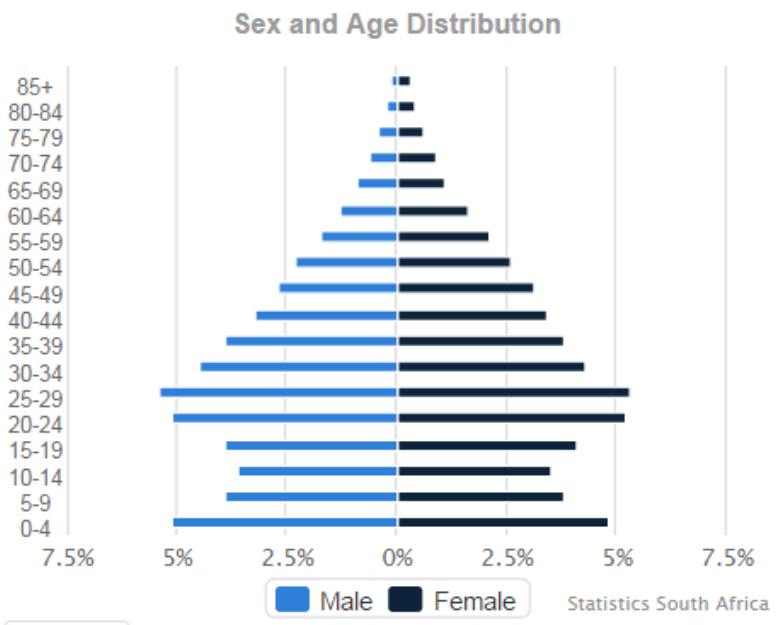
Table 2 Key statistics about Cape Town

Key Statistics 2011	
Total population	3,740,026
Young (0-14)	24.8%
Working Age (15-64)	69.6%
Elderly (65+)	5.5%
Dependency ratio	43.6%
Sex ratio	95.9%
Growth rate	2.57% (2001-2011)
Population density	1530 persons/ km^2
Unemployment rate	23.9%
Youth unemployment rate	31.9%
No schooling aged 20+	1.8%
Higher education aged 20+	16.6%
Matric aged 20+	29.8%
Number of households	1,068,573
Number of Agricultural households	43,383
Average household size	3.3
Female headed households	38.2%
Formal dwellings	78.4%
Housing owned/ paying off	54.2%

Flush toilet connected to sewerage	88.2%
Weekly refuse removal	94.3%
Piped water inside dwelling	75%
Electricity for lighting	94%

Table 3 Demographic information about Cape Town

<table>
<tr><td>Total population</td><td>3 740 025</td></tr>
<tr><td>Male- female ratio</td><td>95,9
<table><tr><th>Sex</th><th>Percentage</th></tr><tr><td>Female</td><td>51,1%</td></tr><tr><td>Male</td><td>48,9%</td></tr></table>
(raw data available-Census 2011)</td></tr>
<tr><td>Age distribution</td><td><table><tr><th>Age</th><th>Males</th><th>Females</th></tr><tr><td>0-4</td><td>5,1%</td><td>4,8%</td></tr><tr><td>5-9</td><td>3,9%</td><td>3,8%</td></tr><tr><td>10-14</td><td>3,6%</td><td>3,5%</td></tr><tr><td>15-19</td><td>3,9%</td><td>4,1%</td></tr><tr><td>20-24</td><td>5,1%</td><td>5,2%</td></tr><tr><td>25-29</td><td>5,4%</td><td>5,3%</td></tr><tr><td>30-34</td><td>4,5%</td><td>4,3%</td></tr><tr><td>35-39</td><td>3,9%</td><td>3,8%</td></tr><tr><td>40-44</td><td>3,2%</td><td>3,4%</td></tr><tr><td>45-49</td><td>2,7%</td><td>2,7%</td></tr><tr><td>50-54</td><td>2,3%</td><td>2,6%</td></tr><tr><td>55-59</td><td>1,7%</td><td>2,1%</td></tr><tr><td>60-64</td><td>1,3%</td><td>1,6%</td></tr><tr><td>65-69</td><td>0,9%</td><td>1,1%</td></tr><tr><td>70-74</td><td>0,6%</td><td>0,9%</td></tr><tr><td>75-79</td><td>0,4%</td><td>0,6%</td></tr><tr><td>80-84</td><td>0,2%</td><td>0,4%</td></tr><tr><td>85+</td><td>0,1%</td><td>0,3%</td></tr></table>
(raw data available-Census 2011)</td></tr>
</table>

<table>
<tr><td>Population pyramid</td><td> 

(raw data available-Census 2011)</td></tr>
<tr><td>Fertility</td><td>Total fertility rate (TFR) = 2,2

(source: Estimation of fertility from the 2007community survey of South Africa; http://www.statssa.gov.za/publications/Report-03-00-04/Report-03-00-042010.pdf)</td></tr>
<tr><td>Education</td><td><table>
<tr><th>Group</th><th>Percentage</th></tr>
<tr><td>No Schooling</td><td>3,3%</td></tr>
<tr><td>Some Primary</td><td>37%</td></tr>
<tr><td>Completed Primary</td><td>5,6%</td></tr>
<tr><td>Some Secondary</td><td>32,7%</td></tr>
<tr><td>Completed Secondary</td><td>15,6%</td></tr>
<tr><td>Higher Education</td><td>3,7%</td></tr>
<tr><td>Not Applicable</td><td>2,1%</td></tr>
</table>
(raw data available-Census 2011 → even more detailed: classified by grades and sex)</td></tr>
</table>

Ethnic groups and languages

Ethnic groups:

Group	Percentage
Black African	38,6%
Coloured	42,4%
Indian/Asian	1,4%
White	15,7%
Other	1,9%

Languages:

Language	Percentage
Afrikaans	34,9%
English	27,8%
IsiNdebele	0,3%
IsiXhosa	29,2%
IsiZulu	0,5%
Sepedi	0,2%
Sesotho	1%
Setswana	0,4%
Sign Language	0,4%
SiSwati	0,1%
Tshivenda	0,1%
Xitsonga	0,2%
Other	2.8%
Not Applicable	2,1%

2.1.3 Socio-economic information (*Census 2011-Cape Town*)

The 2011 census provides information about the socio-economic situation of Cape Town which is summarized in table 4.

Table 4 Socio-economic information about Cape Town

<table>
<tr><td>Households</td><td>1 068 572</td></tr>
<tr><td>Average household size</td><td>3.3
(raw data available-Census 201; classified by sex)</td></tr>
<tr><td>Occupational groups</td><td>→ no special occupations mentioned
→classification as followed:
formal sector
informal sector
private household
do not know
unspecified
not applicable
→also classified by sex</td></tr>
<tr><td>Settlement type</td><td><table><tr><th>Area</th><th>Percentage</th></tr><tr><td>Urban</td><td>99,6%</td></tr><tr><td>Tribal/Traditional</td><td>0%</td></tr><tr><td>Farm</td><td>0,4%</td></tr></table></td></tr>
</table>

Housing

House or brick/concrete block structure on a separate stand or yard or on a farm	63.42%
Traditional dwelling/hut/structure made of traditional materials	1.58%
Flat or apartment in a block of flats	19.14%
Cluster house in complex	1.41%
Townhouse (semi-detached house in a complex)	0.75%
Semi-detached house	5.01%
House/flat/room in backyard	1.11%
Informal dwelling (shack; in backyard)	0.94%
Informal dwelling (shack; not in backyard; e.g. in an informal/squatter settlement or on a farm)	3.88%
Room/flatlet on a property or larger dwelling/servants quarters/granny flat	0.86%
Caravan/tent	0.19%
Other	1.72%
Unspecified	0.00%
Not applicable	0.00%

(calculations from raw data from Census 2011; raw data available-Census 2011; classified by sex)

Household Goods

Item	Yes	No
Cellphone	91,3%	8,7%
Computer	37,9%	62,1%
Television	87,3%	12,7%
Satellite Television	30,9%	69,1%
Radio	70,1%	29,9%
Landline / Telephone	34%	66%
Motor Car	45,8%	54,2%
Refrigerator	82,1%	17,9%
Electric / Gas-Stove	91,2%	8,8%

Energy sources

Energy Source	Cooking	Heating	Lighting
Electricity	87,6%	63%	94%
Gas	7,5%	3,5%	0,3%
Paraffin	3,8%	14,9%	3,8%
Solar	0,1%	0,4%	0,2%
Candles	0%	0%	1,5%
Wood	0,3%	1,8%	0%
Coal	0%	0,2%	0%
Animal Dung	0%	0,1%	0%
Other	0,3%	0%	0%
None	0,3%	16,1%	0,2%

(raw data available-Census 2011)

Access to Internet

Access	Percentage
From Home	18,5%
From Cellphone	16,4%
From Work	6,9%
From Elsewhere	7,4%
No Access	50,7%

Tenure status

Tenure Status	Percentage
Rented	29,9%
Owned and fully paid off	33,2%
Owned but not yet paid off	20,9%
Occupied rent free	13%
Other	2,9%

Source of water

Source of water	Percentage
Regional/Local water scheme (operated by municipality or other water services provider)	97,3%
Borehole	0,5%
Spring	0,1%
Rain water tank	0,1%
Dam/Pool/Stagnant water	0,1%
River/Stream	0,1%
Water vendor	0,3%
Water tanker	0,4%
Other	1,1%

(raw data available-Census 2011)

Piped water

Piped (tap) water inside dwelling/institution	77,39%
Piped (tap) water inside yard	12,47%
Piped (tap) water on community stand: distance less than 200m from dwelling/institution	6,82%
Piped (tap) water on community stand: distance between 200m and 500m from dwelling/institution	0,42%
Piped (tap) water on community stand: distance between 500m and 1000m (1km) from dwelling /institution	0,42%
Piped (tap) water on community stand: distance greater than 1000m (1km) from dwelling/institution	0,00%
No access to piped (tap) water	2,33%
Unspecified	0,00%
Not applicable	0,00%

(calculations from raw data from Census 2011)

Toilet facilities

Toilet Facility	Percentage
None	2,7%
Flush toilet (connected to sewerage system)	88,2%
Flush toilet (with septic tank)	2%
Chemical toilet	1,2%
Pit toilet with ventilation	0,2%
Pit toilet without ventilation	0,2%
Bucket toilet	4,5%
Other	1%

(raw data available-Census 2011)

Refuse disposal

Refuse Disposal	Percentage
Removed by local authority/private company at least once a week	94,3%
Removed by local authority/private company less often	0,7%
Communal refuse dump	2,8%
Own refuse dump	1,4%
No rubbish disposal	0,7%
Other	0,2%

(raw data available-Census 2011)

Marital status

Group	Percentage
Married	30,8%
Living together like married partners	5,6%
Never married	57,1%
Widower/Widow	3,3%
Separated	0,7%
Divorced	2,6%

(raw data available-Census 2011 → even more detailed: classified by sex and age group)

Employment

Unemployment rate: 23.9 %
(raw data available-Census 2011; classified by sex)

Table 32 Working Age Population and Labour Force details, 2001 and 2011

	Labour force	Employed	Unemployed	Unemployment rate (Percentage)
2011	1 700 228	1 294 239	405 989	23.9
2001	1 338 521	939 364	399 157	29.8

Source: Statistics South Africa, Census 2001 and Census 2011

Table 34 Characteristics of the Unemployed, 2011

City of Cape Town 2011	Number of unemployed	Unemployment rate within group	Percentage share of the labour force	Percentage share of unemployed
Gender				
Male	196 388	22.1	52.3	48.4
Female	209 601	25.8	47.7	51.6
Population Group				
Black	233 126	34.5	39.7	57.4
Coloured	150 263	22.7	39.0	37.0
Indian or Asian	2 350	9.9	1.4	0.6
White	14 173	4.7	17.7	3.5
Other	6 078	16.2	2.2	1.5
Age				
15 - 19	44 197	63.1	4.1	10.9
20 - 24	94 236	40.3	13.7	23.2
25 - 34	138 913	24.5	33.3	34.2
35 - 44	74 858	17.7	24.8	18.4
45 - 54	41 362	14.4	16.9	10.2
55 - 65	12 424	10.3	7.1	3.1

Source: Statistics South Africa, Census 2011

(https://www.westerncape.gov.za/assets/departments/treasury/Documents/Socio-economic-profiles/dc0_city_of_cape_town_ke_6_dec_2013.pdf)

Average household income

Income	Percentage
None income	13,7%
R1 - R4,800	2,7%
R4,801 - R9,600	4%
R9,601 - R19,600	10,6%
R19,601 - R38,200	16%
R38,201 - R76,4000	14,5%
R76,401 - R153,800	13%
R153,801 - R307,600	11,9%
R307,601 - R614,400	8,7%
R614,001 - R1,228,800	3,6%
R1,228,801 - R2,457,600	0,9%
R2,457,601+	0,5%

(raw data available-Census 2011; classified by sex)

Agriculture

Agricultural households	
Type of specific activity	Number
Livestock production	11,727
Poultry production	11,892
Vegetable production	17,136
Production of other crops	11,245
Other	27,254

Agricultural households	
Type of activity	Number
Crops only	10,195
Animals only	5,019
Mixed farming	9,850
Other	9,320

**An agricultural household may not fall under more than one agricultural activity

	Income category of agricultural households Annual income category of agricultural household heads / Number No income: 7,062 R1-R4 800: 888 R4 801-R38 400: 10,711 R38 401-R307 200: 10,704 R307 201+: 3,530 Unspecified: 1,487
Literacy[1]	90.5%
Poverty	**Poverty levels** — **2001** — **2010** Poverty rate (percentage of people living in poverty) — 23.9% — 19.7% Number of indigent households – September 2013 — — 432 385
Crime (numbers)	**Crime (numbers)** — **2010/11** — **2011/12** — **2012/13** Murder — 1 801 — 1 604 — 1 860 Total sexual crimes — 5 417 — 5 173 — 4 790 Drug related crimes — 46 506 — 50 326 — 53 715
Income	No income: 32.73 % R 1 - R 400: 4.56 % R 401 - R 800: 2.67 % R 801 - R 1 600: 11.28 % R 1 601 - R 3 200: 12.11 % R 3 201 - R 6 400: 5.54 % R 6 401 - R 12 800: 7.12 % R 12 801 - R 25 600: 7.98 % R 25 601 - R 51 200: 3.30 % R 51 201 - R 102 400: 0.68 % R 102 401 - R 204 800: 0.15 % R 204 801 or more: 0.20 % Unspecified: 9.39 %

[1] Literacy is in general defined as the ability to read and write. In a more strictly definition it is the successful completion of a minimum of 7 years of formal education.

	Not applicable | 2.27 % (calculations from raw data from Census 2011; raw data available-Census 2011; classified by sex)
Gross domestic product (GDP)	R203 581 million (constant 2005 prices) → the three biggest sectors of economy are: • finance, insurance, property and business services • manufacturing • wholesale and retail trade, catering and accommodation (http://www.statssa.gov.za/?page_id=1021&id=city-of-cape-town-municipality)
Gini Coefficient[2]	City of Cape Town Metropolitan Municipality: 0.57 (https://www.westerncape.gov.za/assets/departments/treasury/Documents/Socio-economic-profiles/dc0_city_of_cape_town_ke_6_dec_2013.pdf)

The Western Cape Government has prioritized investment in Early Childhood Development (ECD) to improve the educational level of the province. Therefore the City of Cape Town implemented education facilities and public schools (table 5). The learner teacher ratio reflects the amount of money spent per children and has, like the dropout rate, an impact on the educational outcomes. Both indicators can be seen in table 5. The City of Cape Town has 186 or 24.9% no-fee schools. Related to other local municipalities within Western Cape this is relatively low (e.g. Langeberg has a no-fee schools rate of 87.7%). Another indicator for educational outcome is the matric pass rate. It represents the number of people who graduated from high school (passing the so called matriculation or matric exams). In 2012, 80.6 % of the city's matriculates passed the exams.
(source:
https://www.westerncape.gov.za/assets/departments/treasury/Documents/Socio-economic-profiles/dc0_city_of_cape_town_ke_6_dec_2013.pdf)

Information about the socio-economic-index for education, housing and economics can be found for each ward. See figure 11 - 13 for a graphical summary of the indices.

[2] The Gini coefficient is a summary statistic of income inequality. Gini $\in[0;1]$
It is 0 is the case of perfect equality (all households earn equal income),

(from:
https://www.westerncape.gov.za/assets/departments/treasury/Documents/Socio-economic-profiles/dc0_city_of_cape_town_ke_6_dec_2013.pdf)

Table 5 Early childhood facilities of Cape Town, 2013

Region	Area	Number of ECD facilities funded	Number of children accessing ECD services in funded facilities	Number of facilities registered
Metro South				271
	Athlone	36	2 964	
	Mitchell's Plain	36	2 856	
	Wynberg	29	2 224	
	Gugulethu	116	8 189	
		217	16 233	
Metro East				255
	Khayelitsha	199	12 383	
	Eerste River	94	5 043	
		293	17 426	
Metro North				306
	Bellville	54	2 769	
	Cape Town	20	1 495	
		74	4 264	
Total		584	37 923	832

Table 6 Learner enrolment, learner-teacher ratio and dropout rate 2012 and 2013, City of Cape Town

	Learner enrolment Public & Independent Schools (Gr 1-12 + LSEN)		Learner teacher ratio		Dropout rate
	2012	2013	2012	2013	2012
City of Cape Town	594 313	633 999	36.4	31.7	40.1%
Western Cape	936 515	988 524	31.2		38.9%

2.1.4 Health system, health services and health

The Health System of South Africa consists of a public and a private sector. Due to that health care varies from basic services like primary health care to highly specialized hi-tech services available in the public and the private sector. Primary health care is, in general, offered for free by the state e.g. for pregnant women and children below six years of age. Although it has to deliver services to about 80% of the population, it is under-resourced in most parts of the state. Besides that, the same amount of people consults traditional healers alongside general medical practitioners. While access to primary health care has improved over the last years, the quality has declined e.g. because of a shortage of key medical personnel and a missing supervision of facilities. On the other hand, in the private sector a large asset is available because of its commercial justification which attracts middle and high-income earners who often are members of the medical vocational classes. This two-tiered system is inequitable and inaccessible to a large portion of South Africans. An advance of this situation is achieved by the implementation of the National Health Insurance (NHI). It is a financing system that will make sure that all citizens of South Africa […] are provided with essential healthcare, regardless of their employment status and ability to make a direct monetary contribution to the NHI Fund" (http://www.doh.gov.za/nhi.php). The strategic program should improve hospital infrastructure, human resources management and the procurement of the necessary medical equipment. The NHI is intended to reform the health system to improve service provision and health care delivery. Beginning in 2012 with the pilot project, the different phases of the program will be conducted over the next 14 years. (source: http://www.statssa.gov.za/publications/Report-03-19-00/Report-03-19-002012.pdf; http://www.southafrica.info/about/health/health.htm#.VUoJnY7tlBc)

The main part of health care, especially the public sector, is authorized by the state represented by the Department of Health, the top level of the health system. The next level consists of the provincial health departments (South Africa has nine provinces). They "provide and manage health services via district-based, public health-care model" (http://www.southafrica.info/about/health/health.htm#structure). The standard of health care delivered varies from province to province due to different allocations of the available resources. South Africa has more than 110 registered medical

schemes, which are supported by hundreds of non-governmental organizations (NGO) who play an important role to the function of South Africa's health system.

The latest political changes can be found in the annual "South African Health Review 2013-14" (see: http://www.health-e.org.za/wp-content/uploads/2014/10/South-African-Health-Review-2013-14.pdf)

Health services

The health services of the City of Cape Town can be described with input, process, output, outcome and impact indicators of health services. A short overview about the most important indicators can be found in the article "Accessing district health services by means of indicators" by Sonia Diaz-Monsalve & Axel Kroeger (in: The Use of Epidemiology in Local Health Planning; Zed Books). Table 7 summarizes the key words connected to the main parts of health services descriptions. Each key word then is displayed by indicator. For example, an indicator for availability is the number of health centres per 10 000 citizens. Furthermore use is measured e.g. as the ratio of number of ante-natal controls per number of pregnant women attending.

Table 7 Indicators for district health services (from: Diaz-Monsalve &Kroeger, 1997)

Input*	1. 2.	**Accessibility** Availability
Process	3. 4. 5. 6.	**Activities**** Productivity Use Utilization
Output	7. 8. 9.	Coverage Efficiency Efficacy
Outcome (impact on population)	10.	**Effectiveness**

* Sometimes called 'structure indicators'
** Activities may be interpreted as an input and/or as the result of the health services efforts. However, in this framework it is seen as an indicator which measures merely what is happening within the health services.

Information exits for the whole country and the provinces of South Africa. Concerning the City of Cape Town or even the health districts of Cape Town the situation changes. Especially the individual indicators are often not recorded on small disaggregation levels.

In the following the available information (just reports no raw data) and their levels of disaggregation are summarized:

South Africa level

- number of births, age of mother, birth registration, month of birth http://www.statssa.gov.za/publications/P0305/P03052013.pdf
- under 5-mortality, causes of deaths, age distribution, trends in recent years http://www.mrc.ac.za/bod/MortalityStatisticsSA.pdf
- access to medical aid by gender and age group, child inclusive households by health facilities used and population group, children living less than 30 minutes from the nearest health care facility, health facilities used by households by gender of the household head, people suffering from any chronic illness or acute illness/injury, by age group and ethnic group (→ further information about demographic and socio-economic status of vulnerable groups) http://www.statssa.gov.za/publications/Report-03-19-00/Report-03-19-002012.pdf
- immunization http://apps.who.int/immunization_monitoring/globalsummary/countries?countrycriteria%5Bcountry%5D%5B%5D=ZAF
- comprehensive report about use of health facilities and levels of selected health conditions, e.g. utilisation and access to health facilities, medical age coverage, health-care seeking behaviour, communicable and non-communicable disease http://www.statssa.gov.za/publications/Report-03-00-05/Report-03-00-052011.pdf
- perinatal deaths, birth weight, early neonatal deaths cause of deaths http://www.statssa.gov.za/publications/P03094/P030942013.pdf

- Saving babies: detailed information about perinatal care (birth weight, cause of death, route of delivery and level of care, etc.)
  http://www.ppip.co.za/wp-content/uploads/Saving-Babies-2012-2013.pdf
- Maternal death, cause of death, maternal age
  http://www.childpip.org.za/images/stories/tenth_interim_report__maternal_deaths_2011_and_2012.pdf
  http://www.hst.org.za/sites/default/files/savingmothersshort.pdf
- Saving children: detailed information about children (cause of death, nutrition, contact with health service, diseases e.g. diarrhoeal disease, tuberculosis etc.)
  http://www.childpip.org.za/documents/saving_children_2009.pdf
  http://www.childpip.org.za/images/stories/saving_children_2010-2011.pdf
- Infant mortality rate, mortality children under 5, causes of death (Childhood morbidity and mortality report)
  http://www.sanac.org.za/resources/cat_view/7-publications/9-reports
- HIV prevalence
  http://www.health-e.org.za/wp-content/uploads/2014/05/ASHIVHerp_Report2014_22May2014.pdf

Basic information of socio-economic status, health status of adults and children, anthropometry, health risk profiles, nutritional status of adults and children, perceptions of general health, etc. are summarized in “The South African National Health and Nutrition Examination Survey (SANHANES-1).
(see: http://www.hsrc.ac.za/uploads/pageNews/72/SANHANES-launch%20edition%20%28online%20version%29.pdf)

Provincial level: Western Cape

- partly: Maternal death, causes of death, maternal age
  http://www.childpip.org.za/images/stories/tenth_interim_report__maternal_deaths_2011_and_2012.pdf

- some information: report about use of health facilities and levels of selected health conditions, e.g. utilisation and access to health facilities, medical age coverage, health-care seeking behaviour, communicable and non-communicable disease
  http://www.statssa.gov.za/publications/Report-03-00-05/Report-03-00-052011.pdf
- Information about children who died (demographics, health context, cause of death etc.), Information about quality of child healthcare
  http://www.childpip.org.za/images/stories/saving_children_2010-2011.pdf
- male/female birth ratio
  http://www.statssa.gov.za/publications/P0305/P03052013.pdf
- Early infant diagnosis of HIV infection
  http://www.nhls.ac.za/assets/files/EID_HIV_PCR_2008-2010.pdf
- mortality all ages, causes of death, sex
  http://www.mrc.ac.za/bod/WC2011Report.pdf
  http://www.hst.org.za/content/health-indicators
- maternal deaths due to haemorrhage during or after caesarean section, maternal mortality rate
  http://www.childpip.org.za/images/stories/tenth_interim_report__maternal_deaths_2011_and_2012.pdf

- general health indicator (see figure
  http://www.hst.org.za/content/health-indicators

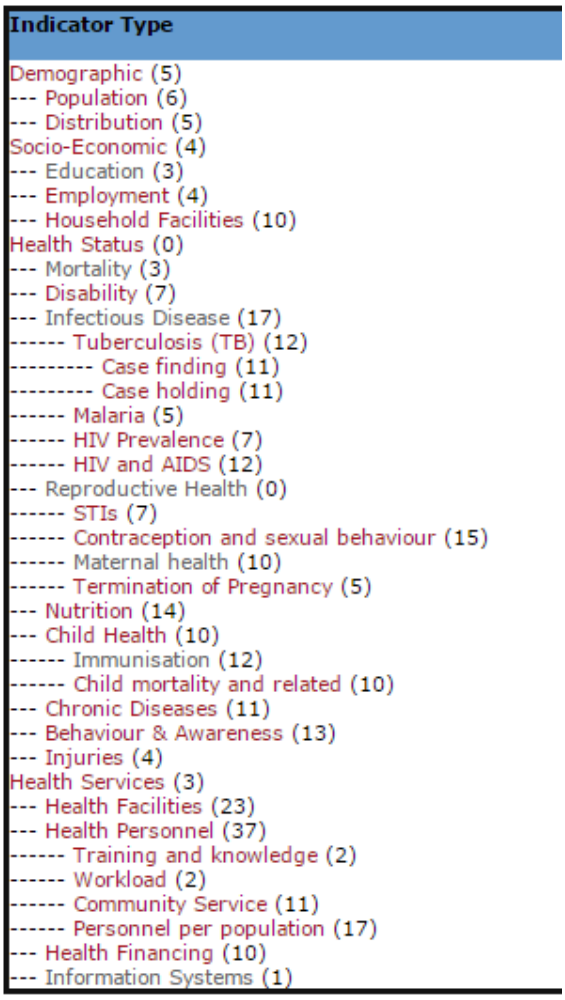


Figure 5 Health indicators for Western Cape

City of Cape Town level

- number of births and birth registrations
  http://www.statssa.gov.za/publications/P0305/P03052013.pdf
  in 2013: 56 977 live births
- under 5-mortality, causes of deaths, age distribution (2004)
  http://www.mrc.ac.za/bod/MortalityStatisticsSA.pdf
- maternal mortality (mainly provincial level, some information about Cape Town)
  http://www.hst.org.za/sites/default/files/DHB_Extra_MMR_Final.pdf

- infant mortality rate, children under 5 mortality rate, causes of death (Childhood morbidity and mortality report) http://www.sanac.org.za/resources/cat_view/7-publications/9-reports
- HIV prevalence (mainly provincial level, some information about Cape Town) http://www.health-e.org.za/wp-content/uploads/2014/05/ASHIVHerp_Report2014_22May2014.pdf
- early infant diagnosis of HIV infection http://www.nhls.ac.za/assets/files/EID_HIV_PCR_2008-2010.pdf
- cause of death and premature mortality https://www.capetown.gov.za/en/CityHealth/HealthInformation/Documents/Key%20Findings%20Cause%20of%20death%20and%20premature%20mortality%20in%20Cape%20Town%202001%20-%202006.pdf https://www.capetown.gov.za/en/CityHealth/Documents/Health%20Data/Cause_of_death_and_premature_mortality_in_Cape_Town_17_Nov_2008.pdf
- condom distribution https://www.capetown.gov.za/en/CityHealth/CommunityHealth/Documents/Condom%20Distribution%20Poster.pdf
- Top 10 causes of death under 1 https://www.capetown.gov.za/en/CityHealth/Documents/Health%20Data/2003%20-%202004%20-%20Top%2010%20Deaths%20Under%201%20-%20Metro.pdf
- partly mortality all ages, causes of death, sex http://www.mrc.ac.za/bod/WC2011Report.pdf
- causes of death and premature mortality http://www.mrc.ac.za/bod/ctmortalitysummaryreport.pdf
- annual indicators for health (lots of graphics) http://www.hst.org.za/sites/default/files/WC_Province.pdf
- list of facilities and kind of facility e.g. clinic, mobile clinic etc. https://www.westerncape.gov.za/assets/departments/treasury/Documents/Socio-economic-profiles/dc0_city_of_cape_town_ke_6_dec_2013.pdf
- number of primary health care facilities (table 8)
- maternal deaths due to haemorrhage during or after caesarean section, maternal mortality rate

http://www.childpip.org.za/images/stories/tenth_interim_report__maternal_deaths_2011_and_2012.pdf

- number of clinics and hospitals http://www.hst.org.za/sites/default/files/District%20Hospital%20Performance%20Assessment%20Report_%20Western%20Cape%20Province.pdf

Table 8 Primary health care facilities in the City of Cape Town, 2013 (from: https://www.westerncape.gov.za/assets/departments/treasury/Documents/Socio-economic-profiles/dc0_city_of_cape_town_ke_6_dec_2013.pdf

Health		
Primary Healthcare Facilities 2013		Number
Community Health Care Centres		9
Community Day Centres		37
Clinics		82
Satellite clinics		17
Mobile clinics		4
District hospitals		9
Regional hospitals		2
	2011/12	**2012/13**
Immunisation rate	87.5 %	89.5 %
Anti-retroviral patient load (HIV/AIDS)	115 533	134 212

Health district (City of Cape Town) level

- Children mortality and basic children health information, special hospital in Cape Town http://www.childpip.org.za/index.php?option=com_content&task=view&id=34&Itemid=1
- cause of death and premature mortality https://www.capetown.gov.za/en/CityHealth/HealthInformation/Documents/Key%20Findings%20Cause%20of%20death%20and%20premature%20mortality%20in%20Cape%20Town%202001%20-%202006.pdf http://www.mrc.co.za/bod/premort_cpt.pdf

- infant mortality rate https://www.capetown.gov.za/en/CityHealth/Documents/Health%20Data/2003%20-%202005%20-%20Infant%20Mortality%20Rate%20-%20Metro.pdf
- diarrhoea and gastritis deaths per months 2004 https://www.capetown.gov.za/en/CityHealth/Documents/Health%20Data/2004%20-%202005%20-%20Diarrhoeal%20and%20Gastro%20Deaths%20-%20Metro.pdf
- births weight, infant mortality rate https://www.capetown.gov.za/en/CityHealth/Documents/Health%20Data/2004%20-%20Health%20Indicators%20-%20Metro.pdf
- live births per clinic (sorted by health district) https://www.capetown.gov.za/en/CityHealth/Documents/Health%20Data/2004%20-%20Live%20Births%20Per%20Clinic%20-%20Metro.pdf
- under 5 mortality rate https://www.capetown.gov.za/en/CityHealth/Documents/Health%20Data/2004%20-%20Under%205%20Mortality%20Rate%20-%20Metro.pdf
- top 10 causes of death, all ages, 2005 https://www.capetown.gov.za/en/CityHealth/Documents/Health%20Data/2005%20-%20Top%2010%20Causes%20of%20Death%20-%20All%20Ages%20-%20Metro.pdf
- top 10 causes of death, under ,1 2005 https://www.capetown.gov.za/en/CityHealth/Documents/Health%20Data/2005%20-%20Top%2010%20Causes%20of%20Death%20-%20Under%201%20-%20Metro.pdf
- top 10 causes of death, under 5, 2005 https://www.capetown.gov.za/en/CityHealth/Documents/Health%20Data/2005%20-%20Top%2010%20Causes%20of%20Death%20-%20Under%205%20-%20Metro.pdf
- 

Clinic	< 1 Deaths	Live Births	IMR	< 18 Births	%	Under 2500g	%

  per health district https://www.capetown.gov.za/en/CityHealth/HealthInformation/Pages/HealthInformation.aspx → tab health information

- health performance per clinic: health district, average length of stay, Cost per patient day equivalent, Usable bed utilization rate, Caesarean section rate, Facility crude death rate, Perinatal mortality rate, Still birth rate http://www.hst.org.za/sites/default/files/District%20Hospital%20Performance%20Assessment%20Report_%20Western%20Cape%20Province.pdf
- causes of death and premature mortality http://www.mrc.ac.za/bod/ctmortalitysummaryreport.pdf
- number of Metropole District Health Services (MDHS Facilities) per health district https://www.capetown.gov.za/en/CityHealth/Documents/Maternity_Facilities_8SubDistricts.pdf
- number of city health clinics per health district https://www.capetown.gov.za/en/CityHealth/ContactUs/Documents/Contact%20-%20City%20Health%20Clinics%20-%201404.pdf

Additional to the reports for mortality the raw data from the Western Cape Mortality Profile 2011 is available. Here detailed information about sex, age and cause of deaths for each health district is specified. Therefore the calculation of mortality tables is possible and will be done in further progress of the project.

Old health district (City of Cape Town) level

- Low birth weight https://www.capetown.gov.za/en/CityHealth/Documents/Health%20Data/2002%20-%20Low%20Birth%20Weight%20-%20Metro.pdf
- Top 10 causes of death, 2004 https://www.capetown.gov.za/en/CityHealth/Documents/Health%20Data/2004%20-%20Top%2010%20Causes%20of%20Death%20-%20All%20Ages%20-%20Districts%20and%20Metro.pdf
- mortality and causes of death, all ages http://www.mrc.ac.za/bod/mortalityct2001part3.pdf

In 2010 the City of Cape Town Metropolitan Municipality had 115 clinics, 53 community health centres (CHCs), 4 mobile services, 7 district 5 regional, 3 central and 7 specialized hospitals.

(source:http://www.hst.org.za/sites/default/files/District%20Hospital%20Performance%20Assessment%20Report_%20Western%20Cape%20Province.pdf)

Detailed information about the different kinds of facilities can be found here: https://www.westerncape.gov.za/text/2007/7/may15,2007-csp_2.pdf.

The City of Cape Town provides a lot of information for the citizens. E.g. the government of Western Cape has published lots of useful information on their webpage (https://www.westerncape.gov.za/dept/health see especially the tabs *services* and *documents*).

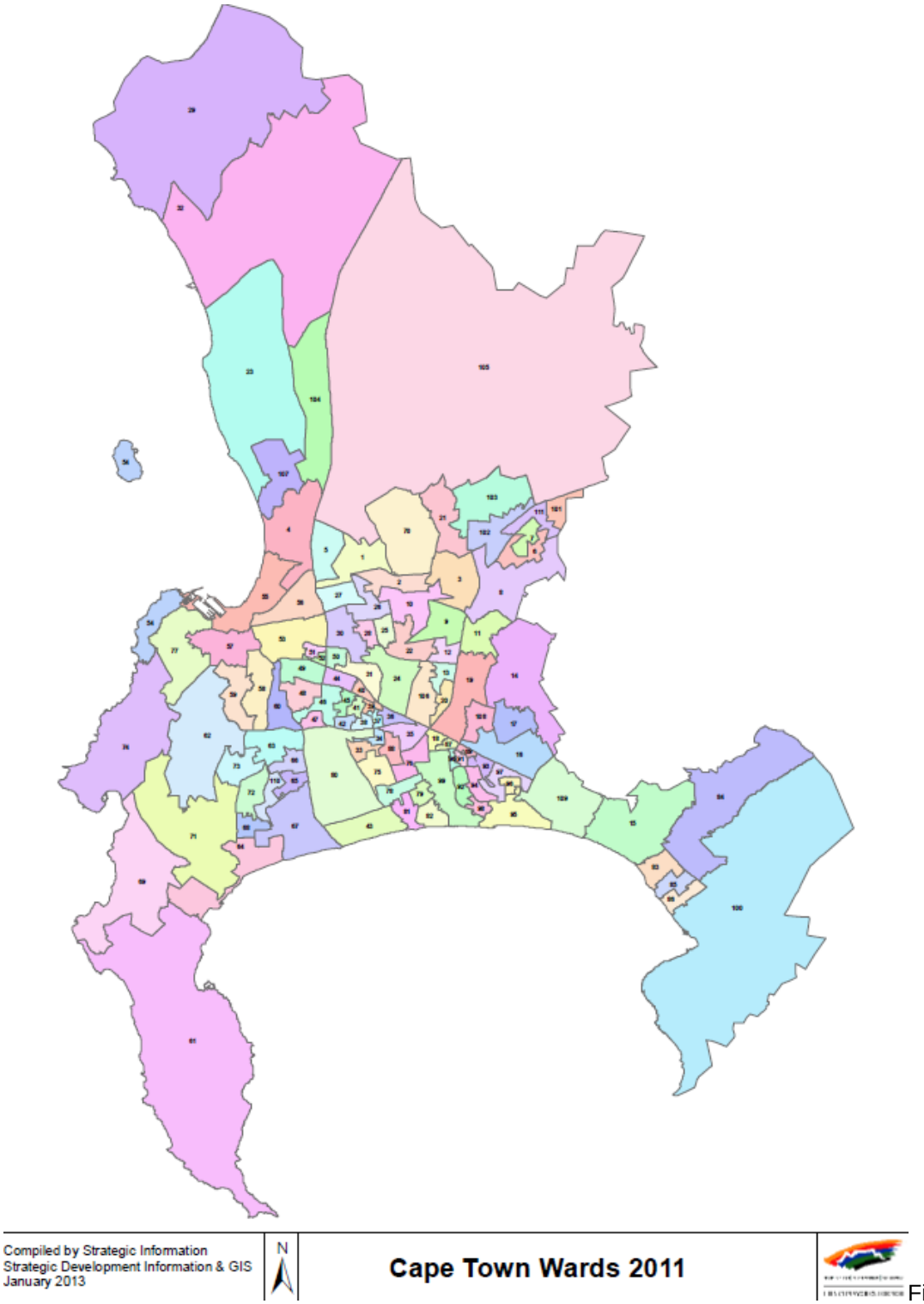


Figure 6 Map of the wards of Cape Town https://www.capetown.gov.za/en/stats/Documents/2011%20Census/Wards/2011%20Ward%20Map.pdf

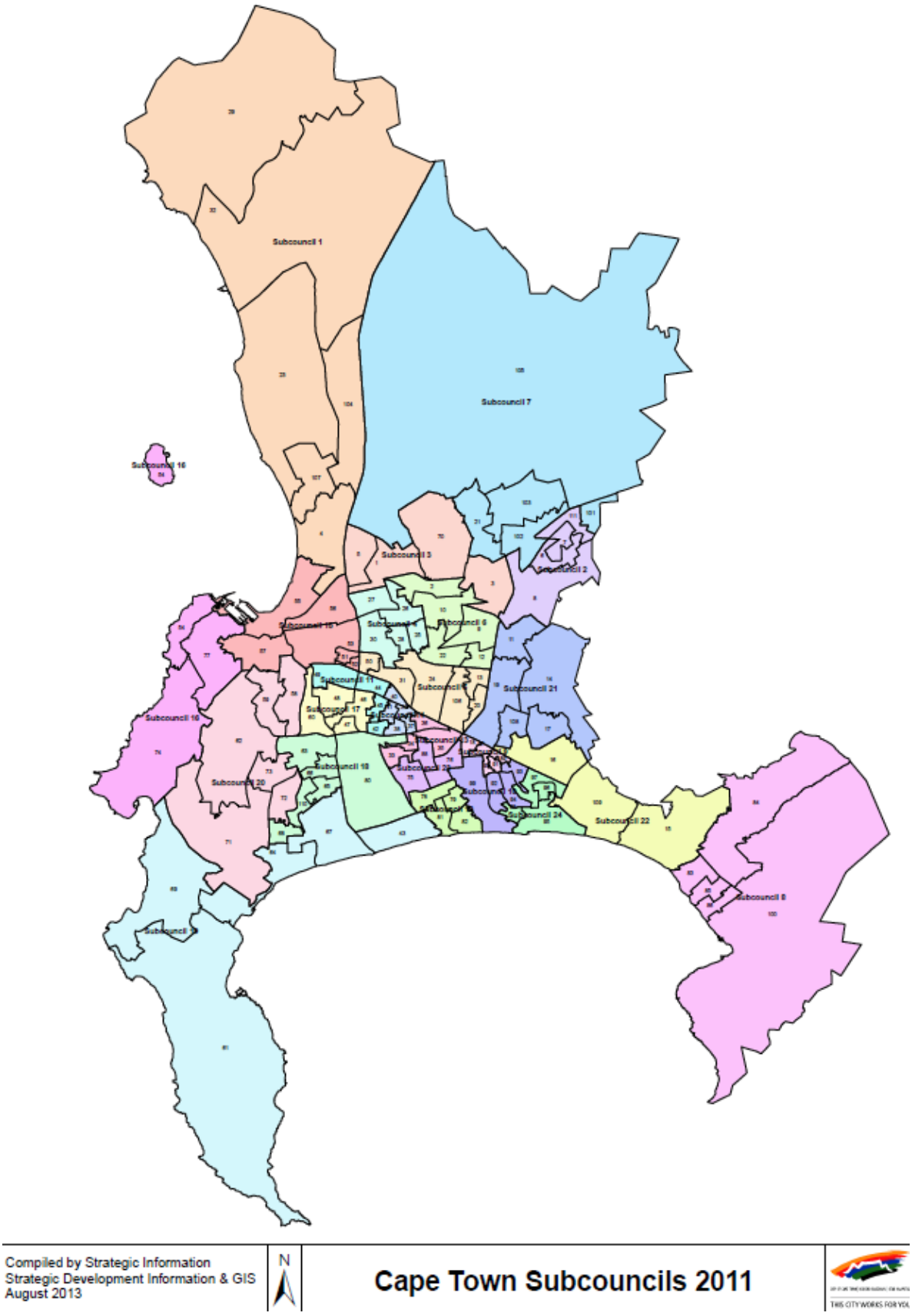


Figure 7 Map of the sub councils of Cape Town

https://www.capetown.gov.za/en/stats/2011%20census%20maps/2011_Subcouncil_Map.pdf

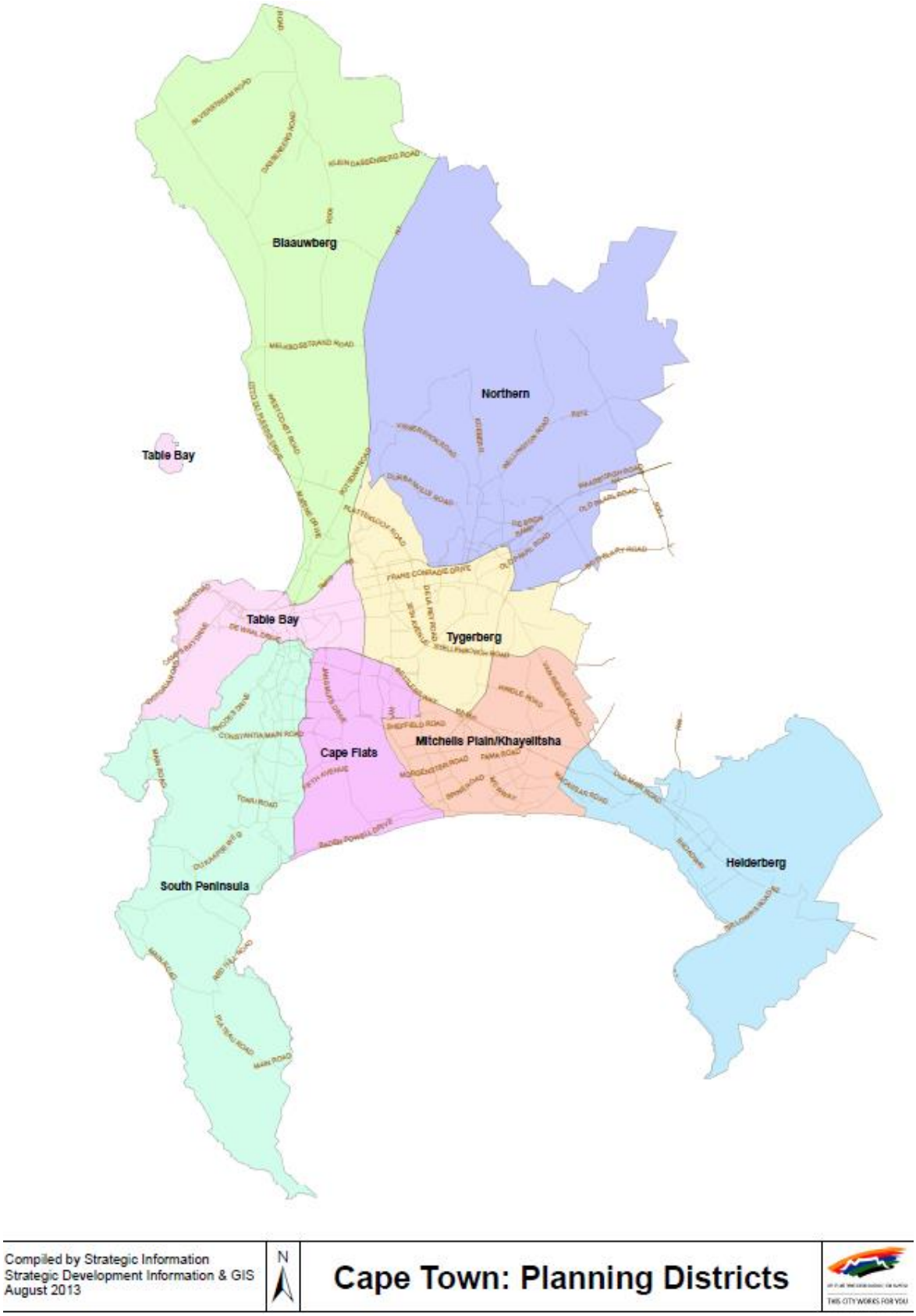


Figure 8 Map of the planning districts of Cape Town

https://www.capetown.gov.za/en/stats/2011%20census%20maps/Planning_District_Map.pdf

Figure 9 Map of the health districts of Cape Town

(https://www.capetown.gov.za/en/stats/2011%20census%20maps/Health_District_Map.pdf)

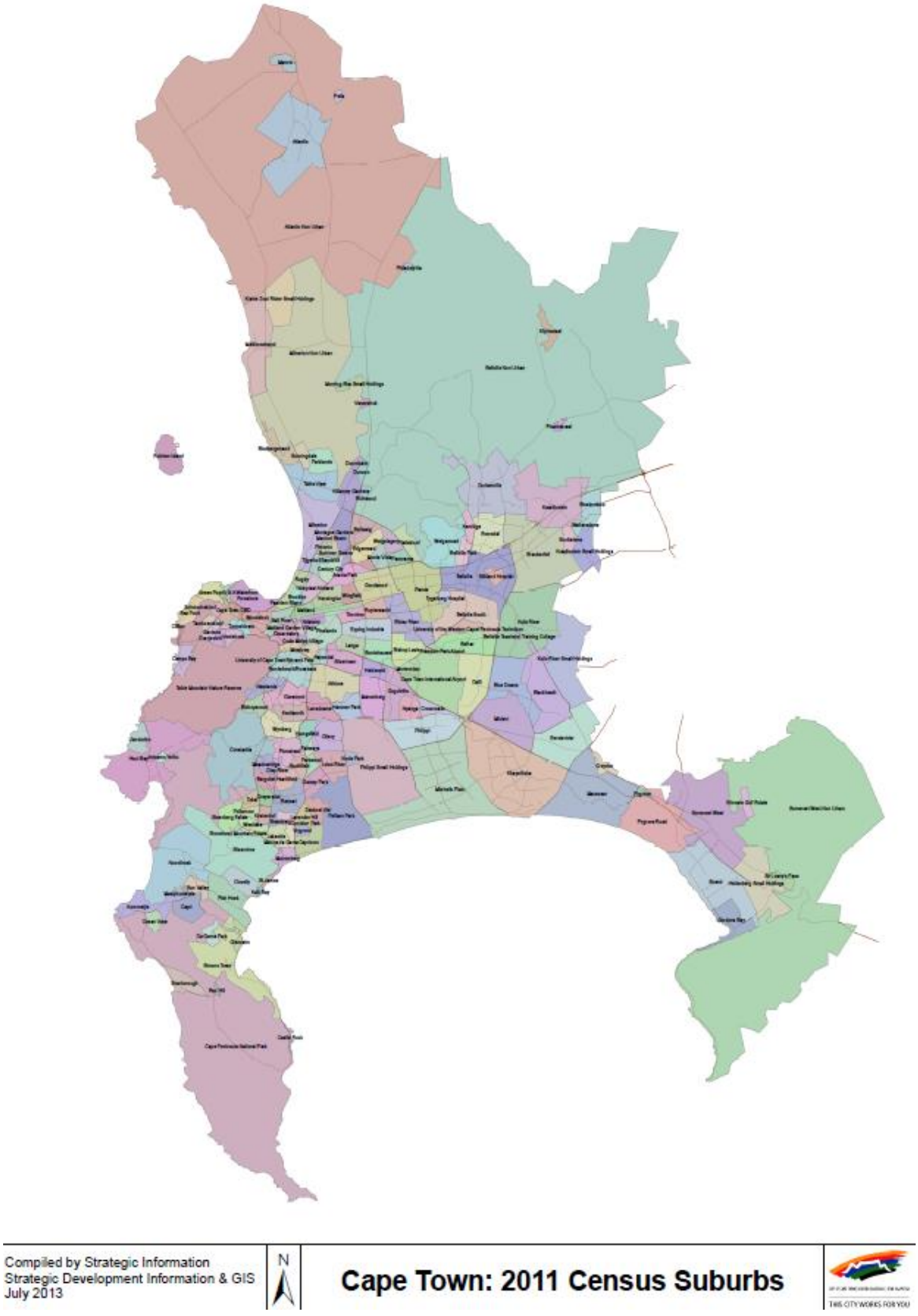
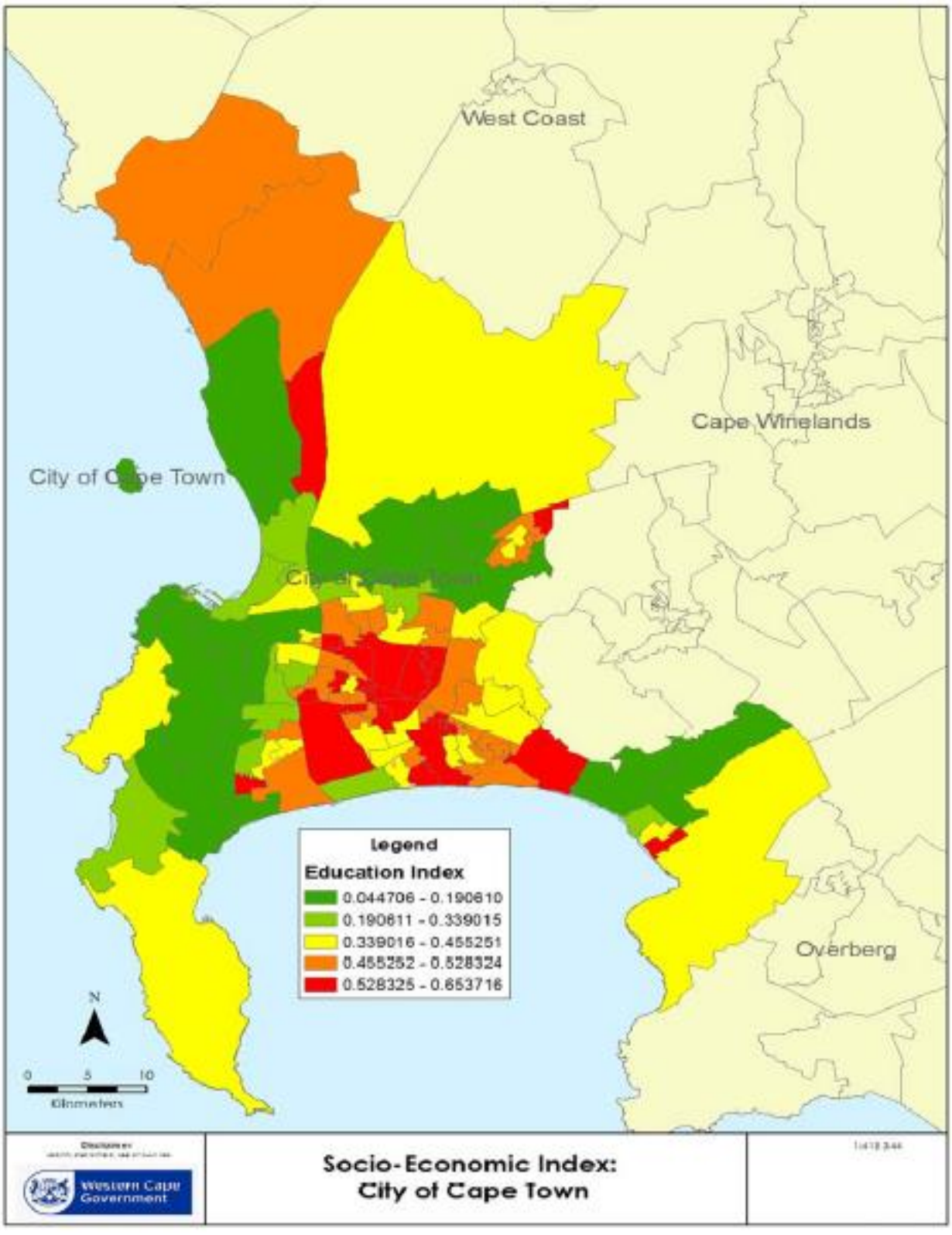


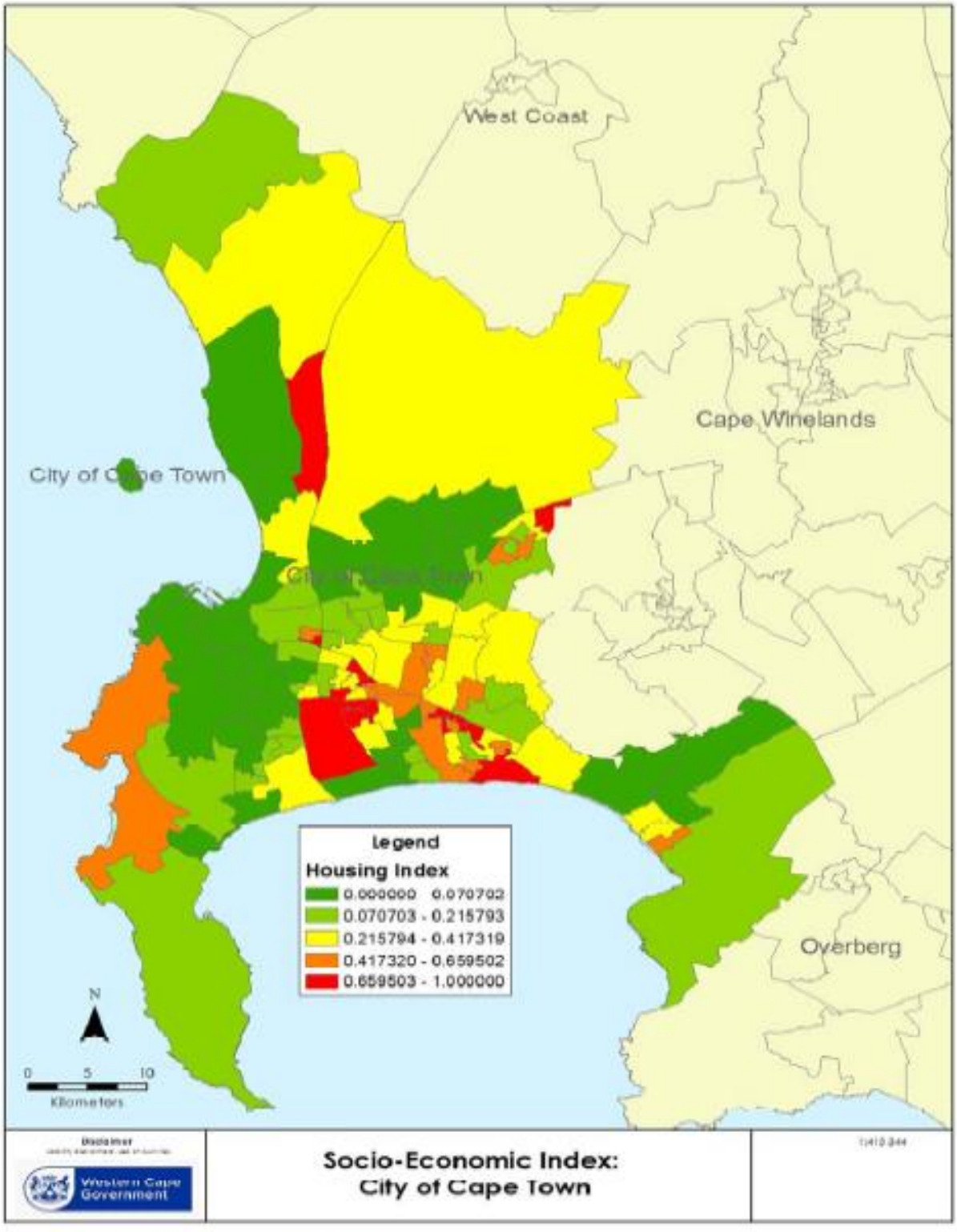
Figure 10 Map of the suburbs of Cape Town

https://www.capetown.gov.za/en/stats/2011CensusSuburbs/2011_Census_Suburbs_Map.pdf



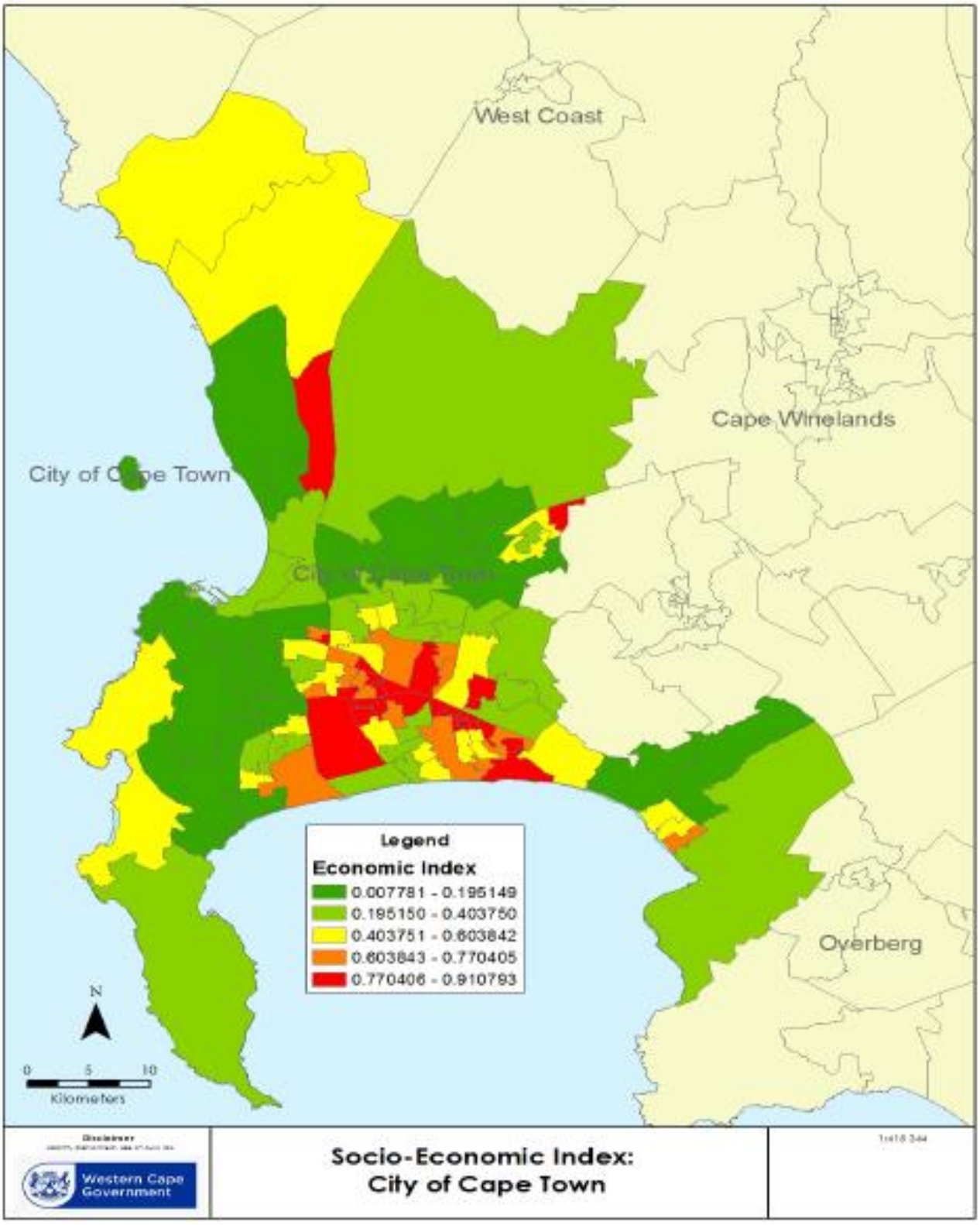
Source: Western Cape Department of Social Development, 2013

Figure 11 Socio-economic index: Education – City of Cape Town wards



Source: Western Cape Department of Social Development, 2013

Figure 12 Socio-economic index: Housing – City of Cape Town wards



Source: Western Cape Department of Social Development, 2013

Figure 13 Socio-economic index: Economic – City of Cape Town wards

3. Biology/ Anthropology

Table 1: Keywords for growths charts sampled information

BAZ	BMIfor-age z-scores
AGA	Appropriate for gestational age
BA	Bone area
BM	Bone mass
BMZ	Bone mineral Content
BP	Blood pressure
BW	Birth weight
CD	Child death
CVD	Cardiovascular diseases
diabetes	
DR	Dietary recording
drugs	drug abuse
FASD	Fetal alcohol spectrum Disorders
FFM	Fat free mass
FM	Total body fat mass
GA	Gestational age
HA	Height for age
HAZ	Age- and sex-specific height-for-age
HC	Head circumference
HIV	Human immunodeficiency virus
HT	Height
LBW	Low birth weight
LM	Lean mass
MA	Maternal age
MeA	Menarche age
NT	Nutrition
OB	Obesity
OW	Overweight
PAEE	Physical activity energyexpenditure
PBF	Percentage body fat
REE	Resting energy expenditure
rural/urban	
SH	Sitting height
ST	Stunting
TBW	Total body water
TDEE	Total daily energy expenditure
WA	Weight-for-age
WAZ	Weight-for age z-scores
WBBMC	Whole body BMC
WBFFST	Whole body fat free soft tissue
WBFM	Whole body fat mass

WC	Waist circumference
WCI	Waist circumference index
WHR	Waist to hip ratio
WT	Weight

4. Environmental Medicine

Figure 1. Air quality monitoring sites in Cape Town (ncamtg_ncamtg.201303.pdf, http://web1.capetown.gov.za/web1/NewCityAirpol/reports/ncamtg_reports.asp).

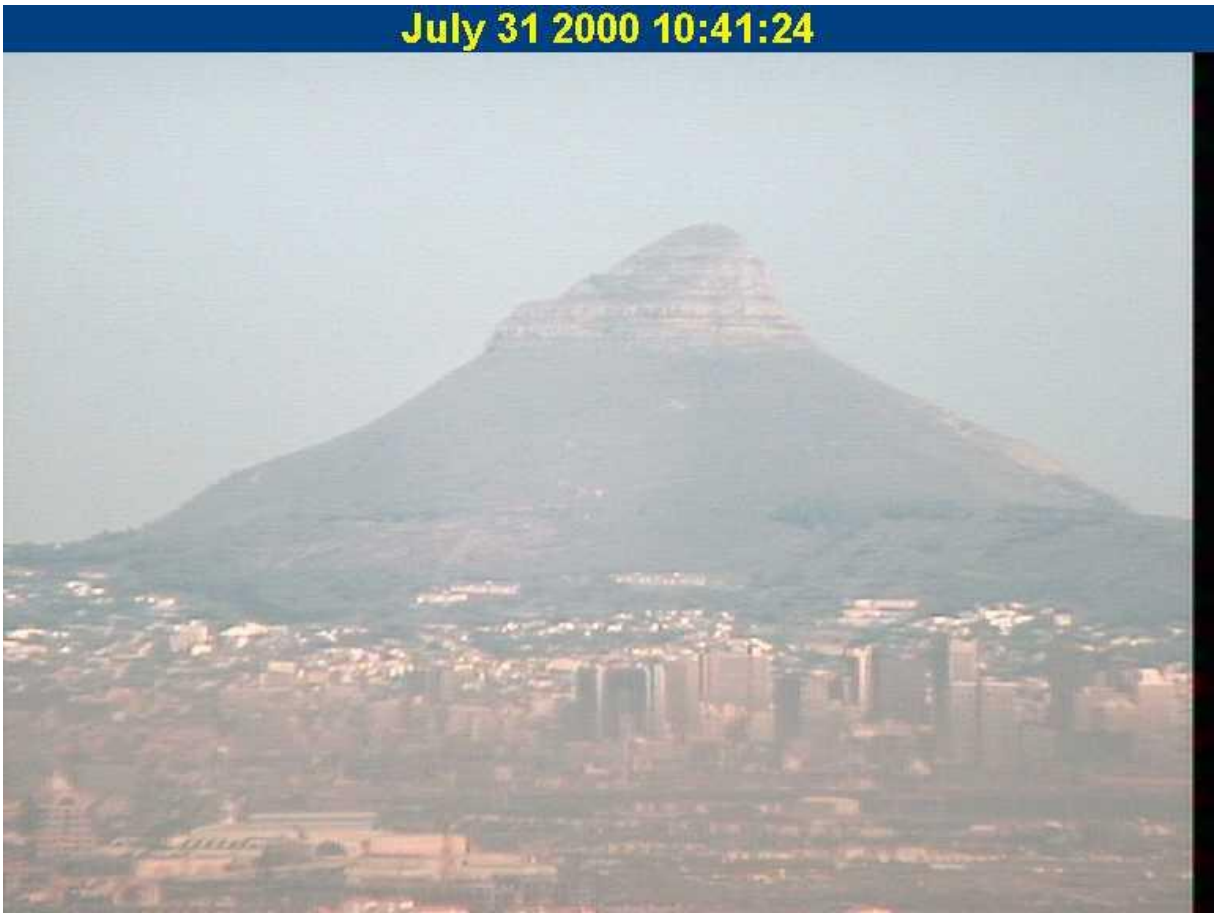


Figure 2. Visible air pollutants „brown haze“ hang over the City of Cape Town. (Plan - Air Quality Management Plan 15 Aug 2008.pdf, https://www.capetown.gov.za/EN/CITYHEALTH/AIRQUALITYMANAGEMENT/Pages/AirQualityManagementPlan.aspx)

Table 1. Monitored Pollutants at the different monitoring sites (AnnualReport2008.pdf, http://web1.capetown.gov.za/web1/NewCityAirpol/specialReports.asp)

City Site	SO2	NO	NO2	NOX	PM-10	CO	H2S	O3	VOC
Athlone	X	X	X	X				X	
Atlantis		X	X	X					
Bellville South	X			X					
Bithasig	X	X	X	X			X		
City Hall	X	X	X	X		X			
Foreshore					X				X
Goodwood	X	X	X	X	X	X		X	
Khayelitsha					X				
Killarney	X	X	X	X	X		X		
Potsdam	X						X		
Somerset West	X	X	X	X	X			X	
Table View	X	X	X	X					
Wallacedene	X	X	X	X	X	X		X	

Table 2. Analytical data and approximate distribution for Cape Town drinking water; sample period: 01.June2013 – 31. May 2014 (http://www.capetown.gov.za/en/Water/Pages/Water-quality.aspx)

ANALYTICAL DATA AND APPROXIMATE DISTRIBUTION FOR CAPE TOWN DRINKING WATER
Sample period: 1 June 2013 to 31 May 2014

The City of Cape Town has been awarded a 2012 Blue Drop Certificate for the quality of its drinking water by the Department Water Affairs (DWA). This assures Cape Town's residents that their tap water is safe to drink and complies with stringent quality checks. The City of Cape Town obtained the highest score of 98,14% in the Western Cape and is one of ten municipalities in the Western Cape that achieved Blue Drop status. The City of Cape Town also received a Platinum Blue Drop Award for its consistent excellent performance for four years and remains in the top performing group of water service authorities in South Africa.

To qualify for a Blue Drop Certificate a water service authority must score at least 95% in meeting the criteria set by the DWA. These include the maintenance and monitoring of the catchment and storage areas and facilities, the pipeline and distribution systems and the water treatment facilities and processes. The water quality has to meet the standard from where it is stored until it is used by the consumer. Adequate staffing with suitable skills coupled to a training regime also forms part of the certification process which is done annually by virtue of a physical audit conducted by DWA officials.

Below are the results for the water quality provided across the City of Cape Town for the indicated period as well as the distribution areas normally linked to the water treatment plants supplying the City. The annual publication of the water quality results is also a requirement of the Blue Drop certification process.

PARAMETERS	SANS 241: 2011 Specs	BLACKHEATH SUPPLY Typical analysis (max 430 Mℓ/day)	FAURE SUPPLY Typical analysis (max 500 Mℓ/day)	KLOOF NEK SUPPLY Typical analysis (max 22.5 Mℓ/day)	STEENBRAS SUPPLY Typical analysis (max 150 Mℓ/day)	VOËLVLEI SUPPLY Typical analysis (max 273 Mℓ/day)	WEMMERSHOEK SUPPLY Typical analysis (max 250 Mℓ/day)	BROOKLANDS SUPPLY Typical analysis (max 5.5 Mℓ/day)	HELDERBERG SUPPLY Typical analysis (max 12 Mℓ/day)	WITZANDS SUPPLY Typical analysis max 15 Mℓ/day	CONSTANTIA NEK SUPPLY Typical analysis max 3 Mℓ/day
PHYSICAL & AESTHETIC DETERMINANDS											
Residual chlorine mg/ℓ	≤5	0.60	0.92	0.81	0.60	0.63	1.00	0.87	0.66	0.81	0.60
Colour mg/ℓ Pt	≤15	5	5	5	6	5	6	6	5	5	6
Conductivity mS/m	≤170	12.6	14.0	17.9	15.0	15.6	8.3	46.8	15.2	24.0	17.3
Odour	Inoffensive	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	-
Taste	Inoffensive	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	-
Total Dissolved Solids mg/ℓ	≤1200	84.2	93.8	119.9	100.3	104.6	55.5	313.5	102.1	160.5	115.9
Turbidity (Tiamo) NTU	Operational ≤1 Aesthetic ≤5	0.72	0.61	0.61	0.64	0.85	0.74	0.62	0.82	0.66	0.60
pH (pH units)	≥5.0 to ≤9.7	8.66	8.70	8.67	9.18	8.68	8.65	8.58	8.55	7.48	8.20
UV 300nm/4cm	-	0.040	0.040	0.060	0.080	0.070	0.070	0.100	0.030	-	0.063
HARDNESS (mg/ℓ)											
Hardness (total) as $CaCO_3$	-	41	44	47	40	39	26	114	36	45	31
CHEMICAL - MACRO DETERMINANDS											
(Nitrate and nitrite) as N mg/ℓ	≤11.9	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	-
Nitrate as N mg/ℓ	≤11.0	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	0.2	-
Nitrite as N mg/ℓ	≤0.9	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	-
Silica as SiO2 mg/ℓ	-	1.0	1.0	1.0	0.8	0.8	1.3	0.8	2.3	1.7	0.8
Sulphate as $SO4^{2-}$ mg/ℓ	Aesthetic ≤250 Acute health ≤500	14.1	19.5	30.1	17.7	22.4	4.6	98.9	9.3	32.1	30.9
Fluoride as F^- mg/ℓ	≤1.5	0.10	0.08	0.10	0.09	0.09	0.10	0.08	0.11	0.12	0.08
Ammonia as N mg/ℓ	≤1.5	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	-
Chloride as Cl^- mg/ℓ	≤300	12.2	13.7	16.6	17.3	21.0	8.3	67.2	24.6	41.5	27.0
Sodium as Na mg/ℓ	≤200	5.1	5.8	10.7	9.0	9.1	3.3	31.5	10.1	19.4	14.2
Zinc as Zn mg/ℓ	≤5	0.090	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Alkalinity as $CaCO_3$ mg/ℓ	-	29.0	26.9	29.1	26.9	18.2	26.6	11.4	25.4	18.1	9.5
Calcium as Ca mg/ℓ	-	14.7	15.9	17.0	14.0	12.2	9.6	39.1	11.4	13.8	10.3
Potassium as K mg/ℓ	-	0.44	0.44	0.27	0.36	0.64	0.21	0.87	0.68	1.23	0.40
Magnesium as Mg mg/ℓ	-	1.11	1.13	1.08	1.17	2.06	0.57	4.12	1.83	2.46	1.41
CHEMICAL - MICRO DETERMINANDS											
Antimony as Sb µg/ℓ	≤20	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
Arsenic as As µg/ℓ	≤10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cadmium as Cd µg/ℓ	≤3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
Chromium (total) as Cr µg/ℓ	≤50	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Cobalt as Co µg/ℓ	≤500	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Copper as Cu µg/ℓ	≤2000	<10	<10	<10	<10	<10	<10	<10	13.5	16.8	10.0
Cyanide as CN^- µg/ℓ	≤70	<10	<10	<10	<10	<10	<10	<10	<10	<10	-
Iron as Fe µg/ℓ	Chronic Health ≤2000 Aesthetic ≤300	<56.4	54.1	<50	51.7	76.4	73.3	<50	55.2	71.4	<50
Lead as Pb µg/ℓ	≤10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Manganese as Mn µg/ℓ	Chronic Health ≤500 Aesthetic ≤100	5.5	5.1	8.3	7.5	5.0	12.6	6.0	8.3	<5	16.4
Mercury as Hg µg/ℓ	≤6	<5	<5	<5	<5	<5	<5	<5	<5	<5	-
Nickel as Ni µg/ℓ	≤70	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Selenium as Se µg/ℓ	≤10	<1	<1	<1	<1	<1	<1	<1	<1	<1	-
Vanadium as V µg/ℓ	≤200	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Aluminium as Al µg/ℓ	≤300	100.6	54.3	198.5	170.5	54.0	165.3	113.7	91.6	<50	371.3
CHEMICAL - ORGANIC DETERMINANDS											
Total organic Carbon mg/ℓ	≤10	1.9	2.1	2.3	2.3	2.4	1.8	3.4	2.3	2.3	2.4
Total THM mg/ℓ	≤0.56	0.01	0.02	0.05	0.10	0.09	0.02	0.08	0.11	0.09	-
Microcystin as LR µg/ℓ	≤1	-	-	-	-	-	-	-	-	-	-
Phenols µg/ℓ	≤10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
MICROBIOLOGICAL DETERMINANDS											
E coli count/100 mℓ	Not detected	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cytopathogenic viruses count/10ℓ	Not detected	0	0	-	0	0	0	0	0	-	-
Cryptosporidium count/10ℓ	Not detected	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Giardia count/10ℓ	Not detected	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total coliforms count/100 mℓ	≤10	1	1	1	2	4	5	1	2	1	1
Heterotrophic plate count/mℓ	≤1 000	8	9	30	13	104	27	8	32	11	1

APPROXIMATE AREAS OF WATER DISTRIBUTION (variable due to optimising of raw water resources, seasonal variations, water treatment plant/reservoir serviceability, systems operations, and parameters also variable due to mixing in distribution system)

BLACKHEATH: Cape Flats, Mitchells Plain, Muizenberg, Fish Hoek, Southern Suburbs and Southern Suburbs (high lying areas on mountainside and Constantia Valley), City Bowl, Bellville, Kuils River, Blue Downs, Eerste River, Khayelitsha, Durbanville, Elsies River, Somerset West, Strand, Nyanga/Gugulethu
BROOKLANDS: Simon's Town
CONSTANTIANEK: Hout Bay (water blended with supplies from Steenbras and/or Blackheath)
FAURE: Cape Flats, Mitchells Plain, Muizenberg, Fish Hoek, Southern Suburbs, Khayelitsha, Somerset West, Strand, Philippi
HELDERBERG: Somerset West
KLOOFNEK: Camps Bay, Sea Point, Tamboerskloof/Gardens (high lying areas)
STEENBRAS: Southern Suburbs (high lying areas on mountainside and Constantia Valley), Somerset West/Gordon's Bay (high lying areas) Fish Hoek and the Far South Peninsula
VOËLVLEI: Northern Suburbs (Atlantis to Milnerton), Epping, City Bowl, Green Point, Durbanville/Kraaifontein (upper areas)
WEMMERSHOEK: Paarl to Bellville, Northern Suburbs, City Bowl, Durbanville, Kraaifontein
WITZANDS: Atlantis (water blended with supplies from Voëlvlei)

ACHMAT EBRAHIM
CITY MANAGER
145/2014

blue drop CERTIFIED Excellent drinking water quality MANAGEMENT

CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

Table 3: Khayelitsha Health district access to piped water and toilet facilities (Khayelitsha Health District.pdf, http://www.capetown.gov.za/en/stats/Pages/2011-Census-Health-District-Profiles.aspx)

Household Services Profile – 2011 Census

Khayelitsha Health District Access to Piped Water	Black African		Coloured		Asian		White		Other		Total	
	Num	%	Num	%	Num	%	Num	%	Num	%	Num	%
Piped water inside dwelling	40 467	34.5%	318	66.3%	24	38.1%	51	50.0%	261	32.7%	41 121	34.6%
Piped water inside yard	31 893	27.2%	84	17.5%	18	28.6%	24	23.5%	405	50.8%	32 424	27.3%
Piped water outside yard: < 200m	33 192	28.3%	51	10.6%	15	23.8%	21	20.6%	105	13.2%	33 384	28.1%
Piped water outside yard: > 200m	10 905	9.3%	21	4.4%	6	9.5%	6	5.9%	24	3.0%	10 962	9.2%
No access to piped water	900	0.8%	6	1.3%	0	0.0%	0	0.0%	3	0.4%	909	0.8%
Total	117 357	100.0%	480	100.0%	63	100.0%	102	100.0%	798	100.0%	118 800	100.0%

Khayelitsha Health District Toilet Facility	Black African		Coloured		Asian		White		Other		Total	
	Num	%	Num	%	Num	%	Num	%	Num	%	Num	%
Flush toilet (connected to sewerage system)	83 925	71.5%	411	85.1%	51	89.5%	72	72.7%	687	86.4%	85 146	71.7%
Flush toilet (with septic tank)	4 827	4.1%	12	2.5%	0	0.0%	9	9.1%	27	3.4%	4 875	4.1%
Chemical toilet	4 041	3.4%	9	1.9%	0	0.0%	0	0.0%	6	0.8%	4 056	3.4%
Pit toilet with ventilation (VIP)	666	0.6%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	666	0.6%
Pit toilet without ventilation	684	0.6%	6	1.2%	0	0.0%	0	0.0%	3	0.4%	693	0.6%
Bucket toilet	7 812	6.7%	21	4.3%	3	5.3%	9	9.1%	27	3.4%	7 872	6.6%
Other	3 561	3.0%	6	1.2%	0	0.0%	3	3.0%	15	1.9%	3 585	3.0%
None	11 844	10.1%	18	3.7%	3	5.3%	6	6.1%	30	3.8%	11 901	10.0%
Total	117 360	100.0%	483	100.0%	57	100.0%	99	100.0%	795	100.0%	118 794	100.0%

Table 4. **Leading 10 causes of premature mortality (YLLs), Cape Town Metro district and subdistricts, South Africa, 2006**

Rank	Eastern	Khayelitsha	Klipfontein	Mitchell's Plain	Southern	Western	Tygerberg	Northern	Metro district
1	HIV/AIDS (17.5%)	HIV/AIDS (25.7%)	Homicide (17.4%)	Homicide (17.7%)	HIV/AIDS (8.5%)	HIV/AIDS (13.1%)	Homicide (11.1%)	Homicide (17.0%)	HIV/AIDS (16.1%)
2	Homicide (11.8%)	Homicide (20.1%)	HIV/AIDS (15.7%)	HIV/AIDS (14.5%)	IHD (7.6%)	Homicide (12.5%)	HIV/AIDS (9.7%)	HIV/AIDS (14. 6%)	Homicide (14.4%)
3	TB (9.7%)	TB (9.8%)	TB (8.0%)	TB (8.7%)	Homicide (7.2%)	TB (8.3%)	TB (7.6%)	TB (8.6%)	TB (8.4%)
4	Road traffic (5.1%)	Road traffic (6.3%)	LRI (5.0%)	Road traffic (5.9%)	TB (6.2%)	Road traffic (5.4%)	Road traffic (6.1%)	Road traffic (6.0%)	Road traffic (5.3%)
5	IHD (3.9%)	LRI (4.7%)	Road traffic (4.2%)	LRI (4.6%)	Stroke (5.3%)	IHD (4.8%)	Diabetes mellitus (5.4%)	IHD (5.5%)	LRI (4.1%)
6	Diarrhoea (3.6%)	Diarrhoea (3.5%)	Diabetes mellitus (3.8%)	Diabetes mellitus (3.9%)	Diabetes mellitus (4.2%)	Stroke (4.1%)	IHD (4.9%)	Suicide (5.5%)	IHD (3.7%)
7	LRI (3.6%)	LBW/RDS (2.5%)	IHD (3.8%)	LBW/RDS (3.6%)	LRI (4.2%)	LRI (3.7%)	Stroke (4.8%)	Lung cancer (2.7%)	Stroke (3.4%)
8	LBW/RDS (3.4%)	Fires (2.4%)	Stroke (3.4%)	Diarrhoea (3.4%)	Lung cancer (3.9%)	LBW/RDS (3.7%)	Lung cancer (3.9%)	Stroke (2.6%)	Diabetes mellitus (3.4%)
9	Stroke (3.4%)	Stroke (1.8%)	LBW/RDS (2.8%)	IHD (2.8%)	Road traffic (3.6%)	Diabetes mellitus (3.2%)	LRI (3.5%)	Diabetes mellitus (2.6%)	LBW/RDS (2.9%)
10	Diabetes mellitus (2.9%)	Diabetes mellitus (0.5%)	Lung cancer (0.2%)	Stroke (2.5%)	Suicide (2.9%)	Lung cancer (2.6%)	COPD (3.4%)	Diarrhoea (2.4%)	Diarrhoea (2.5%)

COPD, chronic obstructive pulmonary disease; IHD, ischaemic heart disease; LBW, low birth weight; LRI, lower respiratory infection; RDS, respiratory distress syndrome, TB, tuberculosis; YLLs, years of life lost.

(source: Groenewald et al 2010, **Table 4**)

Figure 3. Contamination of the area with solid waste in Joe Slovo. (Annexure_2A__Joe_Slovo_Photos_272200612220_359.pdf, https://www.capetown.gov.za/en/stats/CityReports/Pages/InformalSettlements.aspx)

5. Psychosomatic Medicine and Psychotherapy

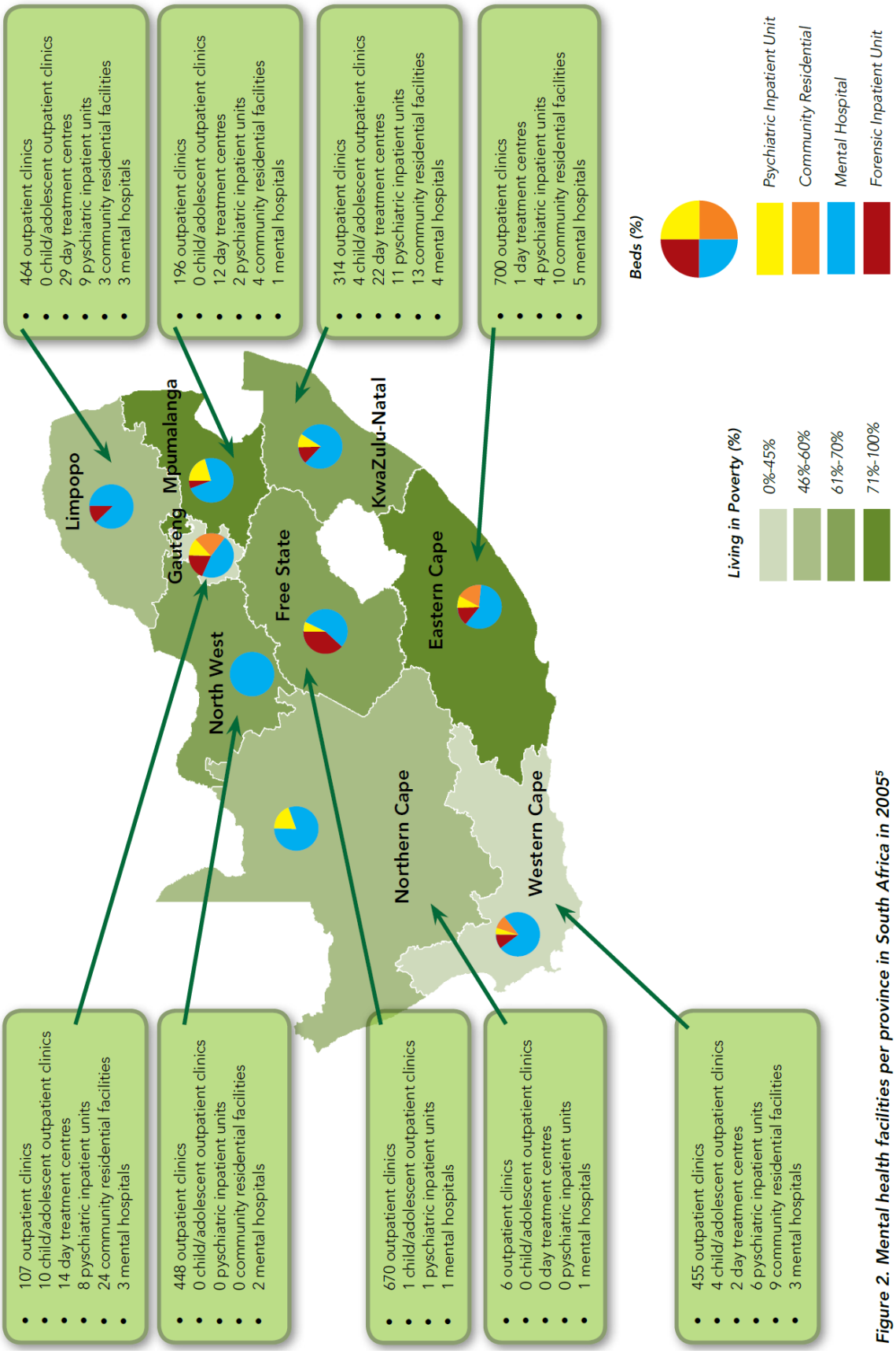


Figure 1: Mental health facilities per province in South Africa in 2005 (Lund, 2010)

Additional Information relevant for donor

Conferences/Workshops

The International Conference on Urban Health (ICUH) 2015 will be held from 24–27 May in Dhaka, Bangladesh under the theme of Urban Health for a Sustainable Future: The Post-2015 Agenda. ICUH is organized on a biannual basis by the International Society for Urban Health as an international forum for information exchange among urban health professionals and other urban stakeholders. The 2015 conference will be the first ICUH held in Asia. We presented an oral presentation with the title “Translating global urban health research and capacity building into action: The approach by the Freiburg University”.

Thesis

We will host the research internship of a bachelorstudent of psychology from 20th of July until 11th of September. We are also working jointly with the Global Studies Programme, a two-year social science Master’s programme. The Programme is conducted jointly by the Albert-Ludwigs-University of Freiburg, the University of Cape Town, FLACSO Argentina (Buenos Aires), Chulalongkorn University (Bangkok) and the Jawaharlal Nehru University (New Delhi). We will offer the possibility to conduct a master´s thesis in joint cooperation of Freiburg und Cape Town University.

6. Palliative Care

Table 1: Matrix of MedLine search

#	Query	Rationale	Hits [n]
1	Palliative care [MeSh]		41.481
2	Palliative care [title/abstract]		16.395
3	Palliative care [affiliation]		5.818
4	#1 OR #2 OR #3	Palliative Care	50.002
5	Hospice [MeSh]		8.887
6	Hospice [title/abstract]		8.408
7	Hospice [affiliation]		2.775
8	#5 OR #6 OR #7	Hospice Care	13.340
9	End-of-life [title/abstract]		13.273
10	Terminal care [title/abstract]		1.404
11	#4 OR #8 OR #9 OR #10	∑ : Hospice/terminal/Eol/Palliative	66.294
12	Cape Town [affiliation]		12.177
13	#12 AND #11	∑ AND from Cape Town	47
14	South Africa [affiliation]		42.390
15	#14 AND #11	∑ AND from South Africa	110
16	#15 NOT #13	#15 but not from Cape Town	68
17	South Africa [title/abstract]		27.063
18	#11 AND #17	∑ AND title/abstract South Africa	95
19	#18 AND #12	#18 AND from Cape Town	13

Table 2: Results of MedLine search via PubMed

Hit nr.	Title	Published	Corresponding Author	Position	Contact	Included (yes/no)	Rationale
1	*The Prevalence and Associated Distress of Physical and Psychological Symptoms in Patients With Advanced Heart Failure Attending a South African Medical Center.*	J Cardiovasc Nurs. 2015 Mar 30. [Epub ahead of print]	Martine E. Lokker	MSC PhD-student, Department of Public Health, Erasmus Medical Centre, Rotterdam, the Netherlands; Department of Palliative Medicine, University of Cape Town, Cape Town, South Africa.	m.lokker@erasmusmc.nl	no	
2	*Creatively caring: effects of arts-based encounters on hospice caregivers in South Africa.*	J Pain Symptom Manage. 2014 May;47(5):946-54.	P.A. Repar	Departments of Music and Internal Medicine, University of New Mexico, Albuquerque, New Mexico, USA	repar@unm.edu	no	1
3	*A psychometric evaluation of the functional assessment of chronic illness therapy-palliative care (FACIT-Pal) scale with palliative care samples in three African countries.*	J Pain Symptom Manage. 2014 Nov;48(5):983-91.	Dr. Richard Harding	University of Cape Town, Cape Town, South Africa; King's College London, Cicely Saunders Institute, Department of Palliative Care, Policy & Rehabilitation, London, United Kingdom	richard.harding@kcl.ac.uk	no	1
4	*Malignancies in South African children with HIV.*	J Pediatr Hematol Oncol. 2014 Mar;36(2):111-7.	A. Davidson	Department of Paediatrics and Child Health, Red Cross Children's Hospital and		no	2

Hit nr.	Title	Published	Corresponding Author	Position	Contact	Included (yes/no)	Rationale
				the University of Cape Town			
5	*Long-term outcomes of patients with extensively drug-resistant tuberculosis in South Africa: a cohort study*	Lancet. 2014 Apr 5;383(9924):1230-9.	E. Pietersen	Lung Infection and Immunity Unit, Division of Pulmonology and University of Cape Town Lung Institute, Department of Medicine, University of Cape Town, Cape Town, South Africa		no	2
6	*A hospital-based palliative care service for patients with advanced organ failure in sub-Saharan Africa reduces admissions and increases home death rates.*	J Pain Symptom Manage. 2014 Apr;47(4):786-92.	Dr. Richard Harding	s.a.	richard.harding@kcl.ac.uk	no	1
7	*Traditional healers' views of the required processes for a "good death" among Xhosa patients pre- and post-death.*	J Pain Symptom Manage. 2013 Sep;46(3):386-94.	Dr. Richard Harding	s.a.	richard.harding@kcl.ac.uk	no	1
8	*The prevalence and burden of pain and other symptoms among South Africans attending highly active antiretroviral therapy (HAART) clinics*	S Afr Med J. 2012 Mar 2;102(6):499-500.	Lindsay Farrant	Palliative Medicine Unit, School of Public Health and Family Medicine, University of Cape Town	lindsaygfarrant@gmail.com	yes	1,2
9	*A cost analysis of a hospital-based palliative care*	J Pain Symptom Manage. 2011	C. Hongoro	Health Systems Research Unit, South	Hongoro@mrc.ac.za	no	2

Hit nr.	Title	Published	Corresponding Author	Position	Contact	Included (yes/no)	Rationale
	outreach program: implications for expanding public sector palliative care in South Africa.	Jun;41(6):1015-24.		African Medical Research Council, Cape Town, South Africa.			
10	*Palliative care in correctional centers-HPCA making progress in South Africa.*	J Pain Symptom Manage. 2010 Jul;40(1):13-4.	Colleen Dempers	Hospice Palliative Care Association of South Africa, Cape Town, South Africa	colleen@hpca.co.za	yes	1,2
11	*Palliative medicine teaching program at the University of Cape Town: integrating palliative care principles into practice.*	J Pain Symptom Manage. 2007 May;33(5):558-62. Review.	Dr. Liz Gwyther*	Hospice Palliative Care Association South Africa, and School of Public Health & Family Medicine, Faculty of Health Sciences, University of Cape Town, West Cape Town, South Africa	liz@hpca.co.za	yes	1,2
12	*End of life care in HIV-infected children who died in hospital.*	Dev World Bioeth. 2002 May;2(1):38-54.	L. D. Henley	Faculty of Health Sciences, University of Cape Town, School of Child and Adolescent Health, Institute of Child Health, Red Cross War Memorial Children's Hospital, Klipfontein Road, Rondebosch 7700, South Africa.	lhenley@ich.uct.ac.za	no	1
13	*Cultural attitudes towards death and dying: a South African perspective*	Palliat Med. 2000 Sep;14(5):437-9.	M. Hosking	St Luke's Hospice, Cape Town, Republic of South Africa		yes	1,2

Rationale 1: publication concerned PC key issues (excluded: paediatrics)
Rationale 2: Author´s affiliation not evidently a country other than South Africa
***(Co-)authored of 6 of the 13 articles**

Table 3: Results of Online Research Hospice Infrastructure

Institution / Project	Web	Contact Person	E-Mail	Phone	Remarks
St. Lukes's Hospice	http://www.stlukes.co.za/	M. Hosking ? (Author of *Cultural attitudes towards death and dying: a South African perspective*.)	marketing@stlukes.co.za reception@stlukes.co.za	+27 (0)21-797 5335 (general phone)	List of all projects: http://www.stlukes.co.za/contact/ z.B. Khayelitsha Community Health Centre
Abundant Life Palliative Care @ Victoria Hospital Wynberg	http://www.abundantlifevic.org/	Dr Clint Cupido (Director)		+27 (0)21-799-1161 (general phone)	
Living Hope (Community w/ Hospice)	http://www.livinghope.co.za/	Sandy Lovick (Manager)	sandy@livinghope.co.za	+27 (0)21 784 2819	
Iris House Children's Hospice	http://www.iris-house.org	Sue Van der Linde (Manager)	sue@iris-house.org	+27 (0)21 910 1578	
Tygerberg Hospice Trust	http://www.tygerberghospice.org	Maureen Venter (Manager)	maureenv@tygerberghospice.org	+27 (0)21 946 2460	
Hermanus Rainbow Trust	http://rainbowtrust.org.za/	Dave Wreford (Manager)	dave@rainbowtrust.org.za	+27 (0)82 896 4345	
Beautiful Gate SA	http://www.beautifulgatesouthafrica.org/	Karien Beukes (Manager)	karien@beautifulgate.org	+27 (0)21 370 2512	
Baphumelele Respite Care Centre	http://baphumelele.org.za/	Bridget Collins (Manager)	bridget@baphumelele.org.za	+27 (0)83 395 6676	in Khayelitsha
Cotlands Western Cape	http://www.cotlands.org.za/	Lynette Lofty-Eaton (Manager)	lynette@cotlands.org	+27 (0)21 852 3527	
Helderberg Hospice	http://helderberghospice.org.za/	Gail Sykes (Manager)	gail@helderberghospice.org.za	+27 (0)21 852 4608	

Table 4 Timetable and deliverables incl. already started/reached milestones

	2015				2016		
Month	**4-6**	**7-8**	**9-10**	**11-12**	**1-2**	**2-3**	**4**
Preliminary mapping of PC services in Cape Town							
Identification of local stakeholders							
Identification of local research partner							
Preparation of preliminary questionnaire							
Pilot and adapt preliminary questionnaire							
Distribute questionnaire							
Data extraction							
Data analysis							
Sharing of results with local partners							
Dissemination of findings and recommendations							
Preparation and coordination of future joint interdisciplinary and international research activity							

Table 5: Outline of Preliminary Survey

Please note:

1. Please, indicate if the requested information is provided as a guess by a health-care professional (*) or not available at all (n.a.)

2. If you consider any other information relevant, please feel free to add as much additional information as you like below as free text.

3. For each number, please identify the source of this information (persons/institutions) and the rationale for choosing this source of information

4. Please, beware of the difference between “palliative care” (general or basic palliative care) and “specialty (or specialist) palliative care” (SPC)

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1. Prerequisite Information[1]

Inhabitants (n)	
Average life	
Childhood mortality	
Opioid availability	
Place of death (%)	
Home	
Hospital	
Hospice	
Other (please	

[1]Please, identify the source of this information (persons/institutions) and the rationale for choosing this source of information

2. General Health Care System Information[1]

Institution	**Number**	**Pt´s treated/yr**
General (family)		
Hospital in-patient beds		
Academic hospitals		
Advanced level		
Basic care		
Hospital out-patient		
Specialties (pts/year)		
Nursing home beds		
Home care nursing		
Other services (please		
1.		
2.		
3.		
4.		

[1]Please, identify the source of this information (persons/institutions) and the rationale for choosing this source of information

3. Available specialist (specialty) hospice and palliative care (SPC) infrastructure[1]

Institution	Number	Pt´s treated/yr
SPC inpatient ward		
Hospital in-patient beds (total)		
Academic hospitals		
Advanced level		
Basic care		
Hospital out-patient facilities		
Specialties		
Nursing home beds		
Home care nursing services		
In-patient hospices		
Hospice services		
Other services (please describe)		
1.		
2.		
3.		
4.		

[1]Please, identify the source of this information (persons/institutions) and the rationale for choosing this source of information

4. What are the most typical diagnoses for patients receiving palliative care? (e. g. cancer, infectious diseases, elderly …)

5. Barriers to the access of specialty palliative care

6. Greatest challenges for palliative care

7. Strong points of local palliative care

8. Differences and similarities between hospice and palliative care in your region

9. Role of family, community (neighborhood) and volunteers in the care for the old and dying

10. Perceived necessity of further specialty palliative care implementation

11. Greatest fears in regard to palliative care development

12. Greatest wishes in regard to palliative care development

13. Information considered most and least helpful in the EAPC toolkit

14. Suggestions for improvement of palliative care in your city (especially from the urban-health perspective)