

Investigating the food environment in Hatfield and Hillcrest, Tshwane

Sibusiso X Lubisi

Centre for Geoinformation Science, Department of Geography, Geoinformatics and Meteorology,
University of Pretoria, Pretoria, South Africa. lubisix@gmail.com

Antony K Cooper

Centre for Geoinformation Science, Department of Geography, Geoinformatics and Meteorology,
University of Pretoria, Pretoria, South Africa.
Built Environment, CSIR, Pretoria, South Africa. acooper@csir.co.za

Abstract

This study explored the availability of, and accessibility to, healthy and varied food in the Hatfield and Hillcrest suburbs of Tshwane, South Africa. These suburbs are adjacent to the main campus of the University of Pretoria and house many of the university's students, in both university residences (TuksRes) and private accommodation. There are various factors that affect nutrition, such as food availability, affordability and variety; dietary preferences; knowledge and ability to prepare and cook food. A food desert is an area (a food environment) where sufficiently healthy and varied food are not readily available to the residents of the area, typically because supermarkets and greengrocers are too few and too far away. Other barriers to accessing enough of the right food are physical (eg: railway lines or mountains), psychological (eg: personal safety concerns), sociological (eg: cultural or religious dietary practices), personal (eg: allergies, shopping patterns, grocery carrying capacity or hours of work), information (eg: knowing what to eat and where to buy) and economical (ie: poverty).

Currently, there are no clear measures to define a food desert or a neighbourhood that lacks access to healthy foods, and there are many complications with identifying one. Further, little research has been done on the prevalence of food deserts in a developing country such as South Africa. This places much flexibility on the researcher, with the risk of over- or under-defining the problem. Hence, we investigated only some aspects of the food environment, namely the availability of, and access to, supermarkets that sell a suitable variety of fruit and vegetables. We also looked only at Hatfield and Hillcrest because they are conveniently demarcated by natural barriers and because the first author lives in the area and hence knows it well. Hopefully, this will contribute to a better understanding of food environments in general, and in South Africa in particular.

Keywords: Healthy food, Food desert, Accessibility

Food Environments

- Where people live affects what they eat and food deserts and accessibility represent new challenges in the fight against diet related diseases.
 - Often, "food deserts" and "supermarket accessibility" are interchanged, but are they the same construct?
 - Is food accessibility a precursor to a food desert?
 - Because studies define a food desert as the researchers understand the term or as it befits their study, and because of different and uneven methodological processes used, it is difficult to compare the results of studies on food deserts.
 - It is difficult to obtain reliable food intake data, because of factors such as portion sizes, number of servings, food and food groups consumed, identifying foods, new foods, mixed dishes and store size and layout.
- [Adams 2010, Faber *et al* 2013, Apparicio *et al* 2007, Bodor *et al* 2007].

Four barriers to accessing and consuming a healthy diet that can overlap and hence constitute unique types of a food desert, depending on the combination:

- **Economic barriers**(poverty), which affects the food a person can buy, their access to fuel for cooking and facilities and equipment for storing, preparing and cooking food;
- **Geographical barriers**, such as freeways, railways, mountains, lakes or rivers;
- **Psychological barriers**, such as concerns over personal safety and the perceived friendliness of the shops; and
- **Sociological barriers**, such as cultural or religious dietary practices [Shaw 2006].

To this, we would add two other types of barriers:

- **Personal barriers**, such as allergies, shopping patterns, grocery carrying capacity, hours of work, family responsibilities and cooking skills; and
- **Information barriers**, such as knowing what to eat and where to buy suitable food.

Personal characteristics of the consumer (food preferences, wealth, etc) are key in determining whether or not they consume healthy food [Turrell & Giskes 2008].

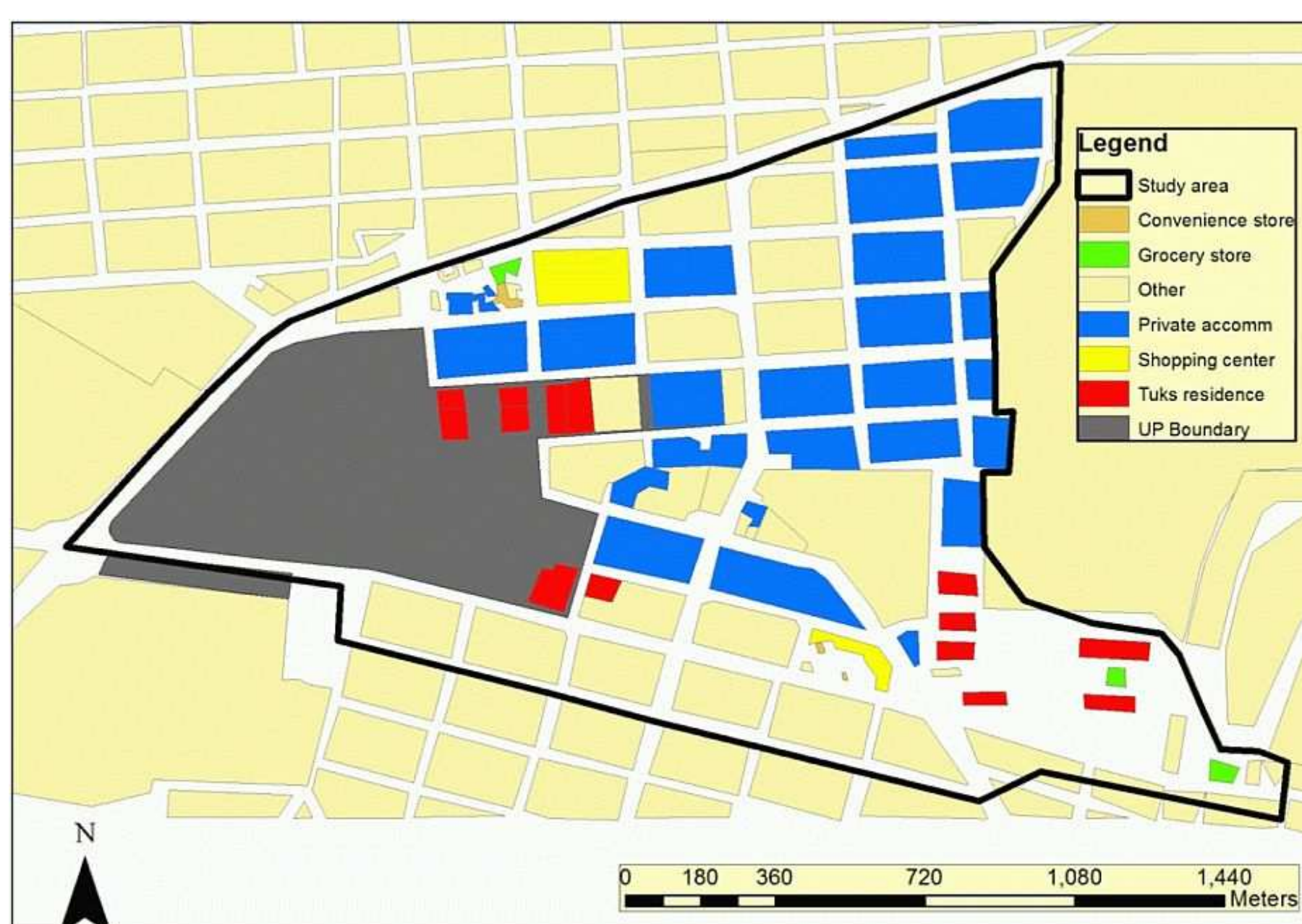
- Over 11 million South Africans (one-fifth of the population) are "food insecure" [Food Bank].
- High food prices tend to force households to reduce the number of meals per day, change their shopping patterns and buy cheaper foodstuffs of lower quality [De Klerk *et al* 2001].
- Student funding is a major problem, with riots over funding closing several universities during 2014 [SAPA 2014a, 2014b, 2014c].

Results

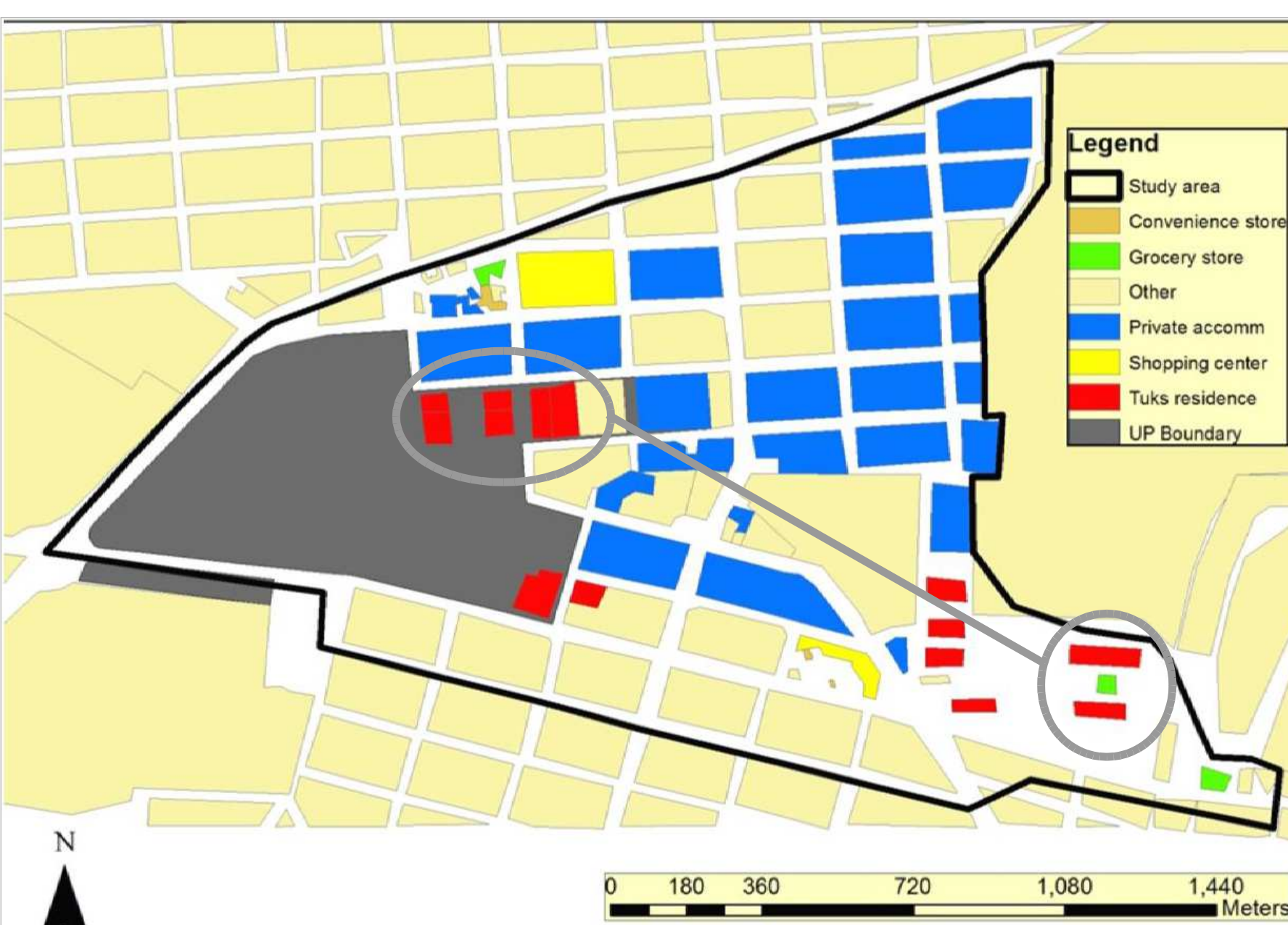
It would appear from our study that:

- Almost all students in University of Pretoria residences in Hatfield and Hillcrest have ready access to grocery stores and shopping centres, and hence to fresh fruit and vegetables.
- However, much of the private accommodation in our study area lies more than 500 metres (an acceptable walking distance [McEntee *et al* 2009, Smoyer-Tomic *et al* 2006]) from grocery stores and shopping centres, and some are also more than 500 metres from public transport.
- On the other hand, many of the students in private accommodation might well have access to private cars.
- Further, we have evidence that some students are willing to walk two kilometres (in each direction) to get a meal.
- This is only a preliminary study considering one aspect of the food environment in the Hatfield and Hillcrest student area, namely accessibility.
- Similar research has been conducted in Arcadia and Eastwood, also near the University of Pretoria, and part of Mamelodi, an historically black suburb or township north-east of Pretoria.
- Further research will need to look at other aspects, such as:
 - The buying patterns of students (TuksRes maintains detailed records of the purchases made at the Tuks Monate shop, which they will make available for analysis).
 - Investigating other areas of South Africa with different spatial and socio-economic characteristics; and
 - Nutritional quality of the food available, food choices, food prices, the actual accessibility of food outlets (comfortable walking distances and carrying loads, such as for the elderly), and the time and/or distance that residents are willing travel or access food shops, be it using their own cars or public transport [Phahana 2013, Phaphana *et al* 2014].

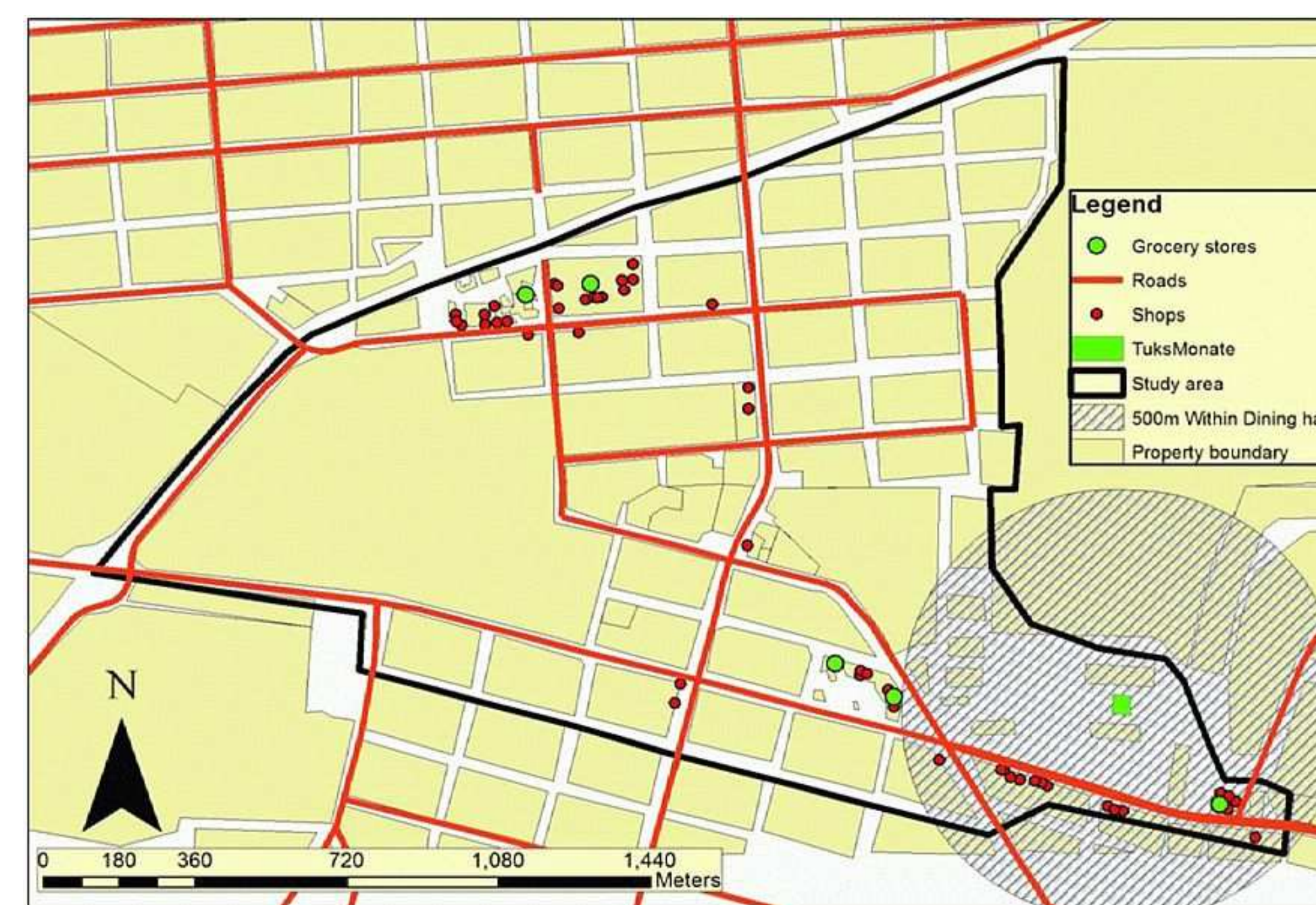
This paper is based on an Honours report in Geoinformatics at the University of Pretoria [Lubisi 2014]. We would like to acknowledge our colleagues at the University of Pretoria for their assistance and the CSIR for funding the presentation of this poster.



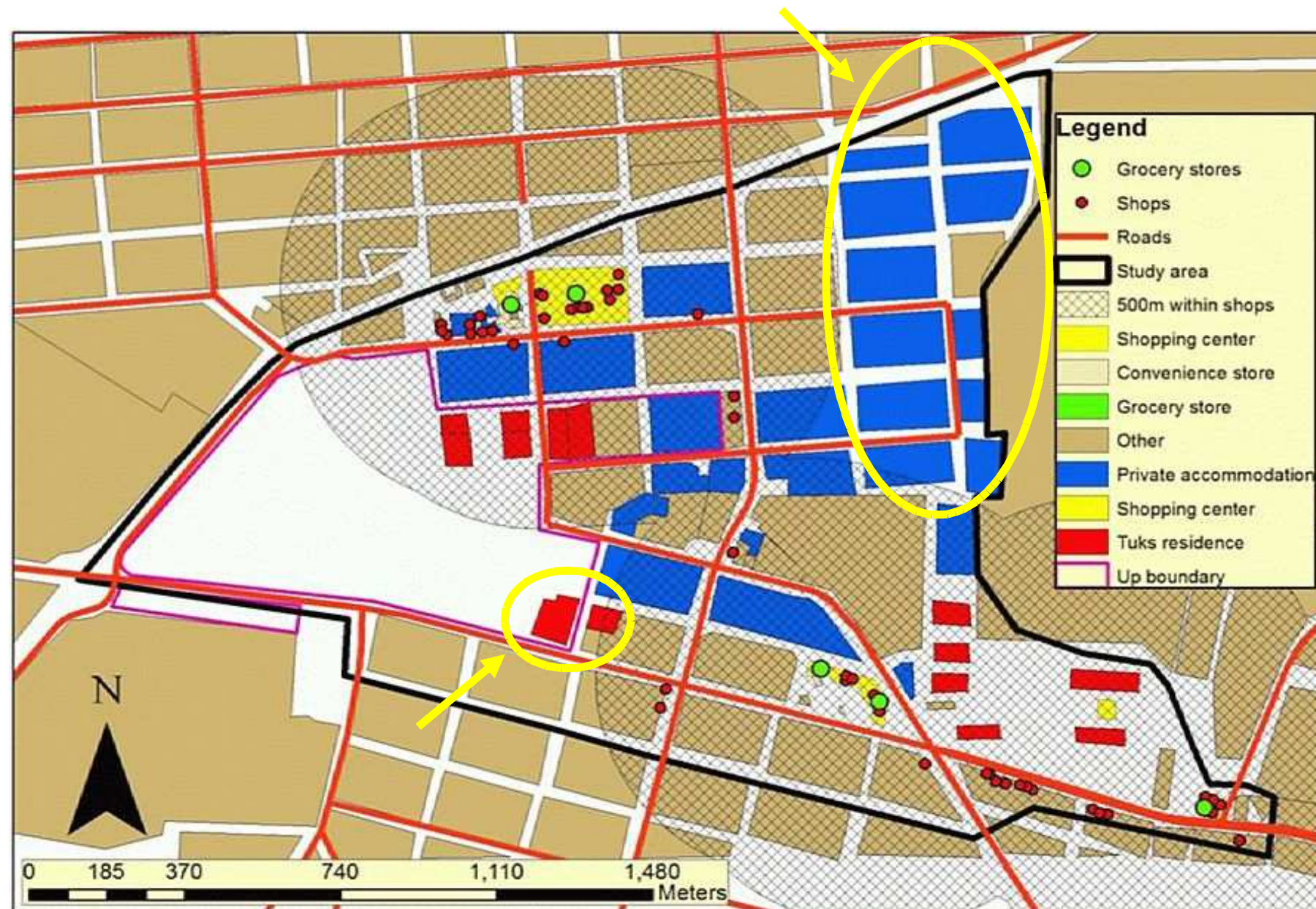
The study area is bounded by the main campus of the University of Pretoria to the west, a railway line to the north, the university's sports fields to the east and residential areas (ie: without shops) to the south. For the southern border, we used Brooks Street and Lynnwood Road, because the available shops that lie between them. Figure 1 also shows the university residences in red, the areas with private accommodation in blue (housing not just students, of course), grocery stores in green and shopping centres in yellow. The private accommodation available to students here includes blocks of flats, houses, "granny flats" (a self-contained unit on a property with a main house) and rooms to let. The other parts of the study area are schools, offices, other commercial properties and sports fields.



The female students in the Hatfield residences have to book their meals the day before. If they do not, they could use Kloostersaal on campus. However, the first author has observed that some who forget to then book walk to Tuks Monate for dinner, a distance of about two kilometres.



This shows that all the residences for which Tuks Monate caters, are within the acceptable walking distance. Of course, during the day the students are likely to be on campus, where they could use Kloostersaal or one of the restaurants there. Further, there are regular university shuttle buses running between those residences and the main campus.



This shows the accessibility to all the grocery stores and shopping centres. As can be seen, they are readily accessible to all but the large swathe of private accommodation to the east of the study area, and the residence south-east of campus.

Of course, accessibility for those with limited mobility, such as the aged or those with disabilities, is likely to be much less. However, for this study we considered the average student.

References

- Adams A (2010) Food Deserts. *Journal of Applied Social Science*, 4(2):58-62.
- Apparicio P, Cloutier M-S, Shearmur R(2007) The case of Montréal's missing food deserts: Evaluation of accessibility to food supermarkets. *International Journal of Health Geographics*, 6(4):13.
- Bodor JN, Rose D, Farley TA, Swalm C, Scott SK(2007) Neighbourhood fruit and vegetable availability and consumption: the role of small food stores in an urban environment. *Public Health Nutrition*, 11(4), pp 413-420.
- De Klerk M, Drimie S, Aliber M, Mini S, Mokoena R, Randela R, Modiselle S, Vogel C, De Swardt C, Kirsten J, Food security in South Africa: Key policy issues for medium term. *Human Sciences Research Council*, Issue 9, pp 64-69. <http://www.hsrc.ac.za/en/research-data/ktree-doc/1199>. Accessed 24 May 2014.
- Faber M, Wenhold FAM, MacIntyre UE, Wentzel-Viljoen E, Steyn NP, Oldewage-Theron WH (2013) Presentation and interpretation of food intake data: Factors affecting comparability across studies. *Nutrition*, 29(11):1286-1292.
- Google maps. <http://maps.google.com/>. Accessed 18 Nov 2014.
- Lubisi SX (2014) Investigating the availability and accessibility of healthy and varied food in the Hatfield and Hillcrest student areas. Honours project, University of Pretoria.
- McEntee J, Agyeman J (2009) Towards the development of a GIS method for identifying rural food deserts: Geographic access in Vermont, USA. *Science Direct*, 30(1):165-176.
- OpenStreetMap. <http://www.openstreetmap.org/>. Accessed 18 Nov 2014.
- Phaphana HM (2013) Using a geographical information system (GIS) in determining the availability and accessibility to fresh fruits and vegetables, transport and food shops in Arcadia and Eastwood's food environment. Honours project, University of Pretoria.
- Phaphana HM, Cooper AK, Wenhold FAM (2014) Determining the availability of, and access to, fresh fruit and vegetables in Arcadia and Eastwood, Pretoria. 10th International Conference of African Association of Remote Sensing of the Environment (AARSE 2014), 27-31 October 2014, Johannesburg, South Africa
- SAPA (6 Aug 2014a) Students told to leave after Medunsa closes. *News24*. <http://www.news24.com/SouthAfrica/News/>. Accessed 6 Aug 2014.
- SAPA (16 Sept 2014b) Classes to resume at Vaal University. <http://www.news24.com/SouthAfrica/News/>. Accessed 16 Sept 2014.
- SAPA (29 Sept 2014c) TUT campuses reopen. <http://www.news24.com/SouthAfrica/News/>. Accessed 29 Sept 2014.
- Shaw H (2006) Food deserts: Towards the development of a classification. *Geografiska Annaler: Series B, Human geography*, 88(2):143-265.
- Smoyer-Tomic KE, Spence JC, Amrhein C (2006) Food Deserts in the Prairies? Supermarket Accessibility and Neighborhood need in Edmonton, Canada. *The Professional Geographer*, 58(3), pp 307-326.
- Turrell G, Giskes K (2008) Socioeconomic disadvantage and the purchase of takeaway food: a multilevel analysis. *Appetite* 51(1):69-81.