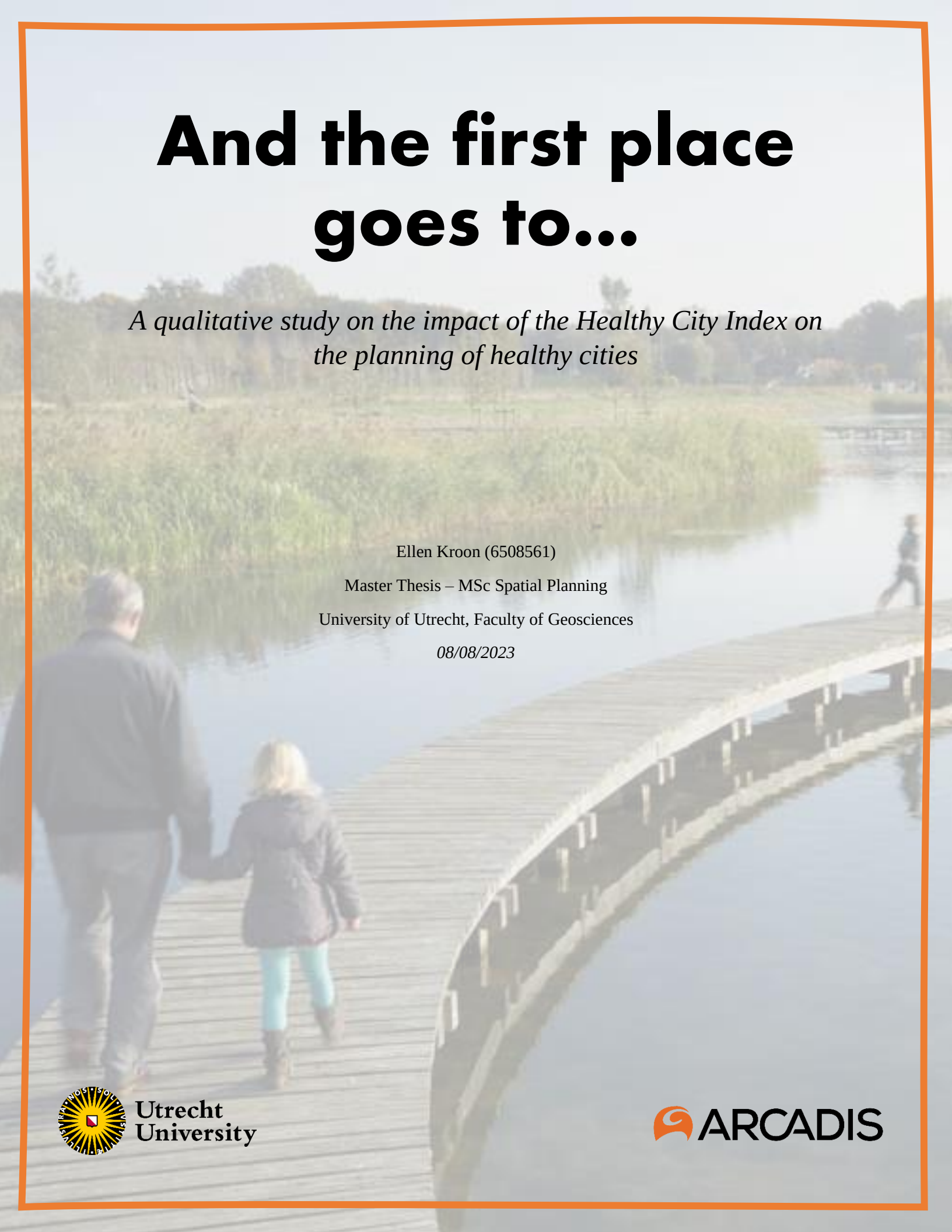
And the first place goes to...

A qualitative study on the impact of the Healthy City Index on the planning of healthy cities



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Master Thesis – MSc Spatial Planning

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ARCADIS

Colophon

Title	And the first place goes to…
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Other actors and agencies shape elements of the built environment.

But the planner has a specific and indispensable role in trying to ensure the healthy and sustainable spatial evolution of neighbourhoods, towns, cities and regions as a whole.

No-one else takes that integrated spatial overview.

It is the planners' job to understand and communicate accurately the significance of physical change for social, economic and environmental variables that affect quality of life, now and in the future.

Hugh Barton (2005, p.354)

Preface

I have learned that success is to be measured not so much by the position that one has reached in life as by the obstacles which he has overcome while trying to succeed.

– Booker T. Washington

Dear reader,

I proudly present my master's thesis "And the first place goes to…". I wrote this thesis to fulfil the graduation requirements of the master's programme in spatial planning at the University of Utrecht. It was a thrilling and challenging process. After working on this thesis for over half a year, this thesis marks the end of my student years. Writing my thesis was not without obstacles. I can tell you; a lot happens in six months. I am glad to have finally finished this thesis and continue my journey into a discipline I fell in love with over the past two years.

I discovered an interest in spatial planning during my bachelor's in information science. Pursuing a master's in spatial planning allowed me to combine my passion for information science related to urban development. The combination of information science and spatial planning offers a unique perspective. Though this combination of studies is rarely seen in the working field, it has become more and more important nowadays.

Starting from my interest in combining both studies, I searched for a suitable research topic for my master's thesis. After a thorough search, I came up with the topic of city rankings and indexes. On the one hand, it has to do with spatial planning, concerning the assessment of the performance of cities on a specific topic. On the other hand, it has to do with information science, considering the data city rankings and indexes consist of. All in all, it turned out to be a great research topic! I enjoyed the process and am gladly satisfied with the final product.

This thesis would not lie in front of you without the help and support of many. First of all, thanks to my internship supervisor, John Boon, for giving me the opportunity to be part of your team at Arcadis as an intern and use the Healthy City Index as a case study. While I was maybe the odd one out in the team at Arcadis, having no design experience and doing a research internship, I still felt welcomed. I had the opportunity to learn a lot about the design side of my discipline (which I, now not so much anymore, secretly fell in love with!). I am also grateful for the support from my supervisor at the University of Utrecht, Jochen Monstadt. Jochen received my thesis topic enthusiastically at the start of the process. He provided me with constructive feedback and made sure I brought out the best researcher in me. I cannot say our meetings went by without challenging discussions. However, I know this was to push me to the best result possible and it undoubtedly contributed to the quality of this thesis. Also, many thanks to all the experts who agreed to help conduct the research!

Finally, thanks to you, the reader, for showing interest in my master's thesis.

I hope you enjoy your reading.

Ellen Kroon

Utrecht, 8th of August 2023

Summary (English)

This summary provides an overview of what was discussed in each chapter of this study.

Introduction. There is a remarkable growth in the appearance of city rankings and indexes. City rankings and indexes are frequently used to evaluate cities' performance in achieving sustainability and health. However, there is a dominant concern in urban studies that the impact of city rankings and indexes is under-examined**.** Consequently, this study explores the impact of city rankings and indexes on the planning of healthy cities. The study addresses two major research gaps. The first is the limited knowledge of the impact of city rankings and indexes in urban studies. The second is the lack of empirical approaches to assessing the impact of city rankings and indexes for planning. The main research question guiding this study is: "*How do city rankings and indexes impact the planning of healthy cities?".* This study contributes to making city rankings and indexes a better-established field of debate in urban studies. Additionally, it enhances awareness of the impact of city rankings and indexes among urban practitioners and initiators of city rankings and indexes.

Literature review. The literature review discusses four topics: (1) healthy cities, (2) city rankings and indexes, (3) city benchmarking, and (4) using evidence in planning. The analysis of prior research shows the following. In essence, a healthy city protects its residents from health risks and promotes a healthy lifestyle. Consequently, urban planning plays a critical role in achieving healthy cities. However, planning healthy cities is complicated and often requires fundamental changes in organisational structures. Next, city rankings and indexes are mainly developed by the private sector and have a variety of both limitations and potentials. The limitations mainly concern their methodology, while the potentials mainly concern their practical use. City rankings and indexes facilitate the process of city benchmarking, which is the practice of comparing cities. Scholars indicate that attitudes toward city benchmarking are based on the effort to change behaviour, performance on the benchmark / ranking or index, and perceived use of the city ranking or index. City benchmarking is criticised for its competitive nature, tendency to overlook the cost compared to the benefits, and under-examination of its initiators. City rankings and indexes, and benchmarking, being based on indicators, serve as a foundation for using evidence in urban planning. Although using evidence and data in planning has great potential, most planning decisions are still based on beliefs and traditions. The use of evidence and data in planning explains how city rankings and indexes may impact the planning of healthy cities.

The conceptual framework is formed based on the literature review. The impact of city rankings and indexes on the planning of healthy cities is conceptualised through the following factors: (1) the attitude toward city rankings and indexes, (2) the importance of the ranking attribute within an organisation, (3) the ranking / performance on a city ranking or index, and (4) the perceived limitations and potentials of city rankings and indexes. This conceptual framework guides the remaining parts of this study.

Methods. To answer the research question, qualitative research methods were used. Specifically, a case study approach involving semi-structured interviews. The case used was the Healthy City Index developed by the consulting and engineering firm Arcadis. In total, 24 experts were interviewed. The experts included experts employed in municipalities included in the Healthy City Index, an expert from Arcadis, the initiator of the index, and one expert with profound knowledge on the topic of healthy cities. Several measures were taken to enhance the research quality regarding validity and reliability. Moreover, given the use of interviews, ethical issues were also considered in the process. The data obtained were manually analysed following a structured step-by-step plan.

Results. The results of this study show the following. The characteristics assessed by the Healthy City Index are based on a prior Dutch study toward healthy cities conducted by the Dutch National Institute for Health

and Environment. The index assessed 25 municipalities across five domains: healthy built environment, healthy mobility, healthy outdoor space, healthy environment, and healthy community. The purposes of the index range from providing insights into pioneering municipalities to being a marketing strategy. Ultimately, municipalities use the index to enhance areas that need to be improved and learn from each other's successes.

Furthermore, the results show that healthy cities have gained importance over the years in municipalities. A healthy city is considered an integral concept; a combination of factors influences health. The planning of healthy cities is complicated by: (1) limited cross-departmental collaboration and coordination, (2) conflicting interests that need to be accommodated in a limited space, (3) limited capacity, and (4) budgetary constraints. A variety of factors that help address these problems are highlighted in the results chapter.

Regarding city rankings and indexes, the results show the perceived limitations and potentials of city rankings and indexes identified by municipal experts. The perceived limitations and potentials focus on the specific and detailed elaboration of the index's results and the perceived added value of city rankings and indexes as a strategic steering tool for planning healthy cities. Moreover, the results show no apparent performance-based differences in attitudes toward city rankings and indexes. Instead, attitudes are influenced more by circumstantial factors.

Municipal experts expressed satisfaction with the existence of city rankings and indexes, including the Healthy City Index. They did not perceive inter-municipal competition as a significant aspect of the Healthy City Index. Based on the perceived limitations, potentials, and attitudes, municipal experts proposed several points of improvement for city rankings and indexes. The points of improvement focus on a precise elaboration of the results and providing an actionable framework. Concerning the use of city rankings and indexes in planning, the results show that the Healthy City Index is not actively used as a strategic steering tool. However, city rankings and indexes are said to have potential for ensuring a focus on indicators and data.

Discussion. The discussion shows parallels and new insights of the results in relation to the literature review. It also highlights the practical implications of the current study. The key findings discussed are as follows. Firstly, the current study extends prior research by highlighting that organisational structures and constraints determine to what extent the challenges of planning healthy cities in a municipality are perceived as a challenge. Additionally, it shows that city rankings and indexes do not directly address the challenges of planning healthy cities, thus limiting their impact on the planning process. Secondly, the results of this study imply that planning healthy cities requires short-term displeasing but long-term pleasing decisions. Thirdly, the results of this study suggest that municipal experts attach greater importance to a final ranking of a city ranking or index than they initially acknowledge. Consequently, inter-municipal competition appears to be more present than acknowledged by the municipal experts. Fourthly, the results imply that perspectives towards city rankings and indexes differ based on job position and the purpose the city ranking or index serves a societal group. This adds a layer of complexity to ongoing academic debates on identifying attitudes toward and limitations and potentials of city rankings and indexes. Fifthly, the results imply that attitudes toward city rankings and indexes are significantly shaped by circumstantial factors and subjective perceptions of city rankings and indexes in general. Consequently, it implies that attitudes toward city rankings and indexes are more difficult to typify than initially comes forward from prior research. Lastly, municipal experts highlight the potential of city rankings and indexes as strategic steering tools, but they are rarely actively used as such. Consequently, it is notable that municipalities do not appear to make significant efforts toward ensuring improvements of city rankings and indexes to enhance their usefulness as a strategic steering tool. This suggests that city rankings and indexes are not of great importance to municipalities in planning healthy cities.

Concerning the practical implications, this research might prove helpful as a guideline for future research, being one of the first studies that intend to find out the impact of city rankings and indexes on the planning of healthy cities. Additionally, it enhances the understanding of how city rankings and indexes could enforce change in the urban environment while remaining critical of their flaws.

Conclusion. The conclusion answers the research question and discusses the research limitations and recommendations for future research. The study concludes that a city ranking or index, specifically the Healthy City Index, has limited impact on the planning of healthy cities. The limited impact is derived from various findings. Firstly, the Healthy City Index has limited usefulness in addressing the main challenges of planning healthy cities. Secondly, the increased awareness of the topic, due to the Healthy City Index, is short-lived and diminishes over time. Thirdly, municipalities do not actively focus on increasing performance on the Healthy City Index to plan a healthy city. Fourthly, considering the limitations, the suitableness of using the Healthy City Index for the planning of healthy cities by municipalities is limited. Lastly, the Healthy City Index is not actively used as a strategic steering tool, limiting its impact. The main impact of the Healthy City Index currently lies in highlighting the topic's urgency, providing evidence for reaffirming existing problems and formulating tasks, and stimulating inter-municipality learning and collaboration. However, this impact is significantly based on speculations and influenced by circumstantial factors within municipalities. Consequently, in its current state, the Healthy City Index is more a marketing tool for Arcadis than it has profound impact on the planning of healthy cities by municipalities.

The main research limitations of this research are the case-specificness, the broad selection criteria for municipal experts, the lack of general municipal perspectives on city rankings and indexes, the broad research scope, and the time constraints during the expert interviews. Consequently, this study opens up various opportunities for future research. For instance, future research could explore the role of job positions within a municipality in perspectives on city rankings and indexes. It could also study the impact of city rankings and indexes in one municipality or department.

Samenvatting (Nederlands)

Deze samenvatting geeft een overzicht van wat er in elk hoofdstuk van dit onderzoek is besproken.

Introduction (introductie). Er is een opmerkelijke groei in de publicatie van stedelijke ranglijsten en indexen. Stedelijke ranglijsten en indexen worden vaak gebruikt om de prestaties van steden op het gebied van duurzaamheid en gezondheid te evalueren. Binnen de academische literatuur wordt aangegeven dat de impact van stedelijke ranglijsten en indexen op ruimtelijke ordening te weinig wordt onderzocht. Daarom onderzoekt deze studie de impact van stedelijke ranglijsten en indexen op het ontwikkelen van gezonde steden. De studie richt zich op twee belangrijke onderzoek kloven. De eerste is de beperkte kennis over de impact van stedelijke ranglijsten en indexen op ruimtelijke ordening. De tweede is het gebrek aan empirische onderzoeken naar de impact van stedelijke ranglijsten en indexen. De onderzoeksvraag van deze studie is: "Hoe beïnvloeden stedelijke ranglijsten en indexen het ontwikkelen van gezonde steden?". Deze studie draagt bij aan het versterken van het academische debat over de impact van stedelijke ranglijsten en indexen. Bovendien vergroot het het bewustzijn van de impact van stedelijke ranglijsten en indexen bij zowel ambtenaren als de initiatiefnemers van stedelijke ranglijsten en indexen.

Literature review (literatuurstudie). Het theoretisch kader bespreekt vier onderwerpen: (1) gezonde steden, (2) stedelijke ranglijsten en indexen, (3) benchmarking van steden, en (4) het gebruik van bewijsmateriaal in het ontwikkelen van steden. De analyse van eerder onderzoek toont het volgende aan. In essentie beschermt een gezonde stad haar inwoners tegen gezondheidsrisico's en bevordert ze een gezonde levensstijl. Ruimtelijke ordening en stedenbouw spelen een cruciale rol bij het ontwikkelen van gezonde steden. Het ontwikkelen van gezonde steden is echter ingewikkeld en vereist vaak fundamentele veranderingen in organisatiestructuren. Verder wijst de literatuur uit dat stedelijke ranglijsten en indexen voornamelijk worden ontwikkeld door de private sector en dat ze verschillende beperkingen en mogelijkheden hebben. De beperkingen hebben vooral betrekking op de methodologie, terwijl de mogelijkheden vooral betrekking hebben op het praktische gebruik van stedelijke ranglijsten en indexen. Stedelijke ranglijsten en indexen vergemakkelijken het proces van benchmarking; het vergelijken van steden. De literatuur geeft aan dat er verschillende houdingen zijn tegenover stedelijke benchmarking. Deze houdingen zijn gebaseerd op de inspanning om gedrag te veranderen, prestaties op de benchmark / ranglijst of index en waargenomen gebruik van de stedelijke ranglijst of index. Benchmarking van steden wordt bekritiseerd vanwege het competitieve karakter, de neiging om de kosten in verband tot de baten over het hoofd te zien en het weinige onderzoek naar de initiatiefnemers van benchmarken. Stedelijke ranglijsten en indexen, en benchmarking, gebaseerd op indicatoren, vormen de basis voor het gebruik van bewijsmateriaal in het ontwikkelen van steden. Ondanks dat het gebruik van bewijsmateriaal en data in de ontwikkeling van steden een groot potentieel heeft, zijn de meeste beslissingen nog steeds gebaseerd op overtuigingen en tradities. Het gebruik van bewijzen en data is een manier waarop stedelijke ranglijsten en indexen de ontwikkeling van gezonde steden kunnen bevorderen.

Het conceptuele kader wordt gevormd op basis van de literatuurstudie. De impact van stedelijke ranglijsten en indexen op de ontwikkeling van gezonde steden wordt geconceptualiseerd aan de hand van de volgende factoren: (1) de houding ten opzichte van stedelijke ranglijsten en indexen, (2) het belang van het rangschikkingskenmerk binnen een organisatie, (3) de prestaties op een stedelijke ranglijst of index en (4) de waargenomen beperkingen en mogelijkheden van stedelijke ranglijsten en indexen. Het conceptuele kader is richtinggevend voor de overige onderdelen van deze studie.

Methods (methode). Om de onderzoeksvraag te beantwoorden, is gebruik gemaakt van kwalitatieve onderzoeksmethoden. In het bijzonder een casus studie met semigestructureerde interviews. De casus was de Gezonde Stad Index, ontwikkeld door het advies- en ingenieursbureau Arcadis. In totaal zijn 24 experts

geïnterviewd. Tot de experts behoorden experts die werkzaam zijn in gemeenten die zijn opgenomen in de Gezonde Stad Index, een expert van Arcadis, tevens de initiatiefnemer van de index, en een expert met diepgaande kennis op het gebied van gezonde steden. Er zijn verschillende maatregelen genomen om de onderzoekskwaliteit te verhogen. Bovendien zijn, gezien het gebruik van interviews, ook ethische kwesties in het onderzoeksproces overwogen. De verkregen data zijn handmatig geanalyseerd volgens een gestructureerd stappenplan.

Results (resultaten). De resultaten van dit onderzoek laten het volgende zien. De kenmerken van de Gezonde Stad Index zijn gebaseerd op een eerder Nederlands onderzoek naar gezonde steden, uitgevoerd door het Rijksinstituut voor Volksgezondheid en Milieu. De index beoordeelde 25 gemeenten in vijf domeinen: gezonde gebouwde omgeving, gezonde mobiliteit, gezonde buitenruimte, gezond milieu en gezonde gemeenschap. De doelen van de index variëren van het inzichtelijk maken van vooraanstaande gemeenten op het gebied van gezonde steden tot het zijn van een marketingstrategie. Het streven is dat de index gebruikt wordt om gemeenten te verbeteren en te leren van elkaars successen.

Verder laten de resultaten zien dat de ontwikkeling van gezonde steden in de loop der jaren belangrijker is geworden voor gemeenten. Een gezonde stad wordt beschouwd als een integraal begrip; een combinatie van factoren beïnvloedt gezondheid. De ontwikkeling van gezonde steden wordt echter bemoeilijkt door: (1) beperkte interdepartementale samenwerking en coördinatie, (2) tegenstrijdige belangen die in een beperkte ruimte moeten worden ondergebracht, (3) beperkte capaciteit en (4) budgettaire beperkingen. Een aantal factoren die deze problemen helpen aan te pakken, worden in het resultaten hoofdstuk belicht.

Met betrekking tot stedelijke ranglijsten en indexen tonen de resultaten de waargenomen beperkingen en mogelijkheden zoals ervaren door de gemeentelijke experts. De waargenomen beperkingen en mogelijkheden richten zich op twee zaken. Ten eerste de specifieke en gedetailleerde uitwerking van de resultaten van de index. Ten tweede de waargenomen toegevoegde waarde van stedelijke ranglijsten en indexen als een strategisch stuurmiddel voor het ontwikkelen van gezonde steden. Bovendien laten de resultaten geen duidelijke, op prestaties gebaseerde, verschillen in houding tegenover stedelijke ranglijsten en indexen zien. In plaats daarvan worden houdingen tegenover stedelijke ranglijsten en indexen meer beïnvloed door omgeving gerelateerde factoren.

Verder zijn gemeentelijke experts tevreden over het bestaan van stedelijke ranglijsten en indexen, waaronder de Gezonde Stad Index. Zij zagen intergemeentelijke concurrentie niet als een belangrijk aspect van de Gezonde Stad Index. Op basis van de waargenomen beperkingen, mogelijkheden en houdingen stelden de gemeentelijke experts verschillende verbeterpunten voor stedelijke ranglijsten en indexen voor. De verbeterpunten richten zich op een preciezere uitwerking van de resultaten. Wat betreft het gebruik van stedelijke ranglijsten en indexen voor het ontwikkelen van gezonde steden, laten de resultaten zien dat de Gezonde Stad Index niet actief wordt gebruikt als stuurmiddel. Er wordt echter wel gezegd dat stedelijke ranglijsten en indexen potentieel hebben om een focus op indicatoren en gegevens te garanderen.

Discussion (discussie). De discussie toont parallellen en nieuwe inzichten van de resultaten in relatie tot de literatuurstudie. Het benadrukt ook de praktische implicaties van de huidige studie. De belangrijkste bevindingen die worden besproken zijn als volgt. Ten eerste bouwt de huidige studie voor op eerder onderzoek door te benadrukken dat organisatiestructuren en beperkingen invloed hebben op de manier waarop uitdagingen van het ontwikkelen van gezonde steden in een gemeente worden ervaren. Bovendien laat het zien dat stedelijke ranglijsten en indexen niet direct de uitdagingen van het ontwikkelen van gezonde steden aanpakken. Hierdoor wordt hun impact op het planningsproces beperkt. Ten tweede impliceren de resultaten van deze studie dat het ontwikkelen van gezonde steden op korte termijn onaangename maar voor de lange termijn aangename beslissingen vereist. Ten derde suggereren de resultaten van deze studie dat

gemeentelijke experts meer belang hechten aan de rangschikking van een stedelijke ranglijst of index dan ze in eerste instantie erkennen. Als gevolg lijkt de intergemeentelijke concurrentie meer aanwezig te zijn dan initieel erkent. Ten vierde impliceren de resultaten dat perspectieven op stedelijke ranglijsten en indexen verschillen op basis van functie en het doel dat de stedelijke ranglijst of index voor een maatschappelijke groep heeft. Dit voegt een laag van complexiteit toe aan lopende academische debatten over het categoriseren van houdingen tegenover, en beperkingen en mogelijkheden van stedelijke ranglijsten en indexen. Ten vijfde impliceren de resultaten dat de houding tegenover stedelijke ranglijsten en indexen aanzienlijk wordt beïnvloed door omgeving gerelateerde factoren en subjectieve percepties van stedelijke ranglijsten en indexen in het algemeen. Dit impliceert dat houdingen tegenover stedelijke ranglijsten en indexen moeilijker te typeren zijn dan naar voren komt uit eerder gedaan onderzoek. Ten slotte wijzen gemeentelijke experts op het potentieel van stedelijke ranglijsten en indexen als strategisch stuurmiddel, maar worden ze zelden als zodanig gebruikt. Het is daarom opmerkelijk dat gemeenten geen significante inspanningen lijken te leveren om te zorgen dat stedelijke ranglijsten en indexen worden verbeterd. Dit suggereert dat stedelijke ranglijsten en indexen niet van groot belang zijn voor gemeenten bij het ontwikkelen van gezonde steden.

Wat betreft de praktische implicaties kan dit onderzoek nuttig zijn als leidraad voor toekomstig onderzoek. Het is een van eerste studies die de impact van stedelijke ranglijsten en indexen op de ontwikkeling van gezonde steden probeert te achterhalen. Bovendien draagt het bij aan het vergroten van het begrip over hoe stedelijke ranglijsten en indexen verandering in de stedelijke omgeving kunnen afdwingen.

Conclusion (conclusie). De conclusie beantwoordt de onderzoeksvraag, bespreekt de beperkingen van de studie en aanbevelingen voor toekomstig onderzoek. De studie concludeert dat een stedelijke ranglijst of index, specifiek de Gezonde Stad Index, een beperkte impact heeft op de ontwikkeling van gezonde steden. Deze conclusie kan worden getrokken op basis van verschillende bevindingen. Ten eerste heeft de Gezonde Stad Index een beperkt nut bij het aanpakken van de belangrijkste uitdagingen van het ontwikkelen van gezonde steden. Ten tweede is de toegenomen aandacht voor het onderwerp, door de publicatie van de Gezonde Stad Index, van korte duur en neemt het in de loop van de tijd af. Ten derde zetten gemeenten niet actief in op het verhogen van de prestaties op de Gezonde Stad Index om een gezonde stad te ontwikkelen. Ten vierde is, gezien de beperkingen, de geschiktheid de Gezond Stad Index voor het ontwikkelen van gezonde steden door gemeenten beperkt. Ten slotte wordt de Gezonde Stad Index niet actief gebruikt als strategisch stuurmiddel, waardoor de impact ervan wordt beperkt. De belangrijkste impact van de Gezonde Stad Index ligt momenteel in het benadrukken van de urgentie van het onderwerp, het leveren van bewijs voor het herbevestigen van bestaande problemen en het formuleren van taken, en het stimuleren van intergemeentelijk leren en samenwerken. Deze impact is echter sterk gebaseerd op speculaties en beïnvloed door omgeving gerelateerde factoren binnen gemeenten. In zijn huidige vorm is de Gezonde Stad Index dan ook meer een marketinginstrument voor Arcadis dan dat het een diepgaande impact heeft op de ontwikkeling van gezonde steden door gemeenten.

De belangrijkste beperkingen van dit onderzoek zijn de specifieke casus, de brede selectiecriteria voor gemeentelijke experts, het ontbreken van algemene gemeentelijke perspectieven op stedelijke ranglijsten en indexen, de brede onderzoek scope en de tijdsdruk tijdens de expertinterviews. Als gevolg biedt deze studie verschillende mogelijkheden voor toekomstig onderzoek. Toekomstig onderzoek zou bijvoorbeeld de rol van functies binnen een gemeente in perspectieven op stedelijke ranglijsten en indexen kunnen onderzoeken. Verder zou het de impact van stedelijke ranglijsten en indexen in één gemeente of voor één specifieke afdeling binnen een gemeente kunnen bestuderen.

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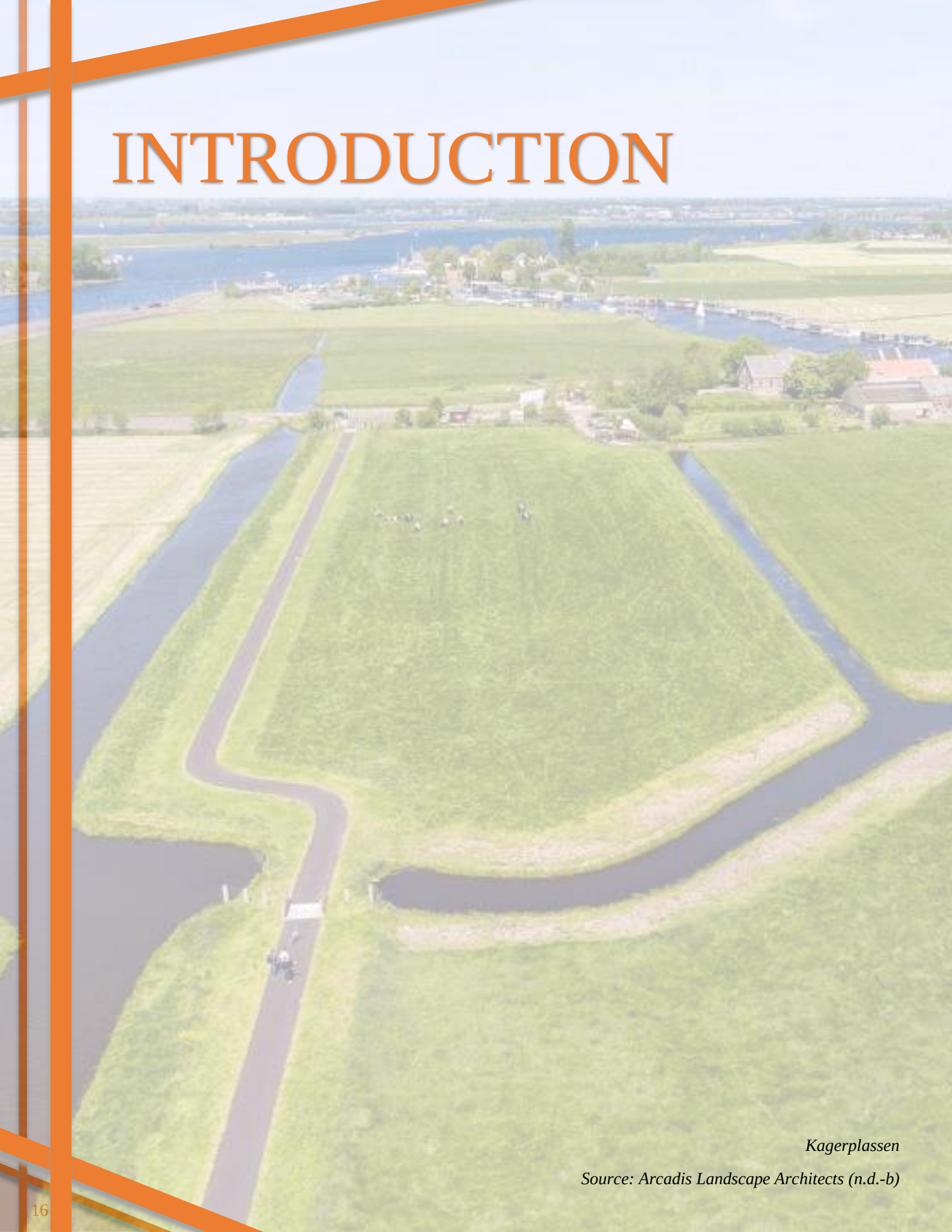
List of abbreviations

Abbreviation	Explanation
CBS	Centraal Bureau voor de Statistiek (English: Statistics Netherlands)
EHCN	European Healthy Cities Network
GIS	Geographical Information System
HCI	Healthy City Index (Dutch: Gezonde Stad Index)
HUP	Healthy Urban Planning
NDVI	Normalised Difference Vegetation Index
NOS	Nederlandse Omroep Stichting (English: Dutch Broadcasting Foundation)
NOVI	Nationale Omgevingsvisie
RIVM	Rijksinstituut voor Volksgezondheid en Milieu (English: Dutch National Institute for Health and Environment)
Rli	Raad voor de leefomgeving en infrastructuur (English: Council for the living environment and infrastructure)
SDGs	Sustainable Development Goals
UN	United Nations
VNG	Vereniging van Nederlandse Gemeenten (English: Association of Netherlands Municipalities)
WHO	World Health Organisation

INTRODUCTION



Kagerplassen

Source: Arcadis Landscape Architects (n.d.-b)

1 Introduction

By 2023, over 60% of the world's population is expected to live in cities. Cities are identified as places that facilitate and stimulate innovation, development, and entrepreneurship (United Nations, Department of Economic and Social Affairs, Population Division, 2019). However, cities increasingly compete to attract investments, create wealth, and thrive. Cities seek an outstanding position by constantly comparing to one another. Consequently, cities simultaneously draw inspiration from and compete with each other. In this context, there is a remarkable growth in the appearance of city rankings and indexes (Acuto et al., 2021; Akande et al., 2019; Giffinger et al., 2010; Sáez et al., 2020).

City rankings and indexes can be interpreted as a "comparative performance measurement" (Acuto et al., 2021, p.364). They serve as an evaluation tool to show a city's performance compared to other cities. Put differently, city rankings and indexes facilitate the process of city benchmarking (Acuto et al., 2021; Meijering et al., 2014). City benchmarking is the comparison of "urban indicators within and across cities to establish how well an area/city is performing vis-à-vis other locales or against best practice" (Kitchin et al., 2015, p.9). City rankings and indexes identify areas for improvement by highlighting a city's strengths and weaknesses. As a result, urban practitioners are said to increasingly rely on city rankings and indexes in decision-making (Acuto et al., 2021; Akande et al., 2019; Giffinger et al., 2010; Kitchin et al., 2015; McManus, 2012; Meijering et al., 2014; Sáez et al., 2020).

City rankings and indexes exist for a wide range of topics (Acuto et al., 2021; Akande et al., 2019; Meijering et al., 2014; Sáez et al., 2020). Examples are the Sustainable Cities Index (Batten, 2022), the City Prosperity Index (UN-Habitat, n.d.), the European Smart Cities ranking (Giffinger et al., 2007), and the Cities in Motion Index (Berrone et al., 2022). Subsequently, these city rankings and indexes rank cities' urban sustainability (Batten, 2022), prosperity (UN-Habitat, n.d.), smartness (Giffinger et al., 2007), and development across the dimensions of governance, economy, social cohesion, human capital, technology, international profile, urban planning, mobility and transportation and environment (Berrone et al., 2022). Soundly, there exists a vast amount of city rankings and indexes assessing diverse topics ranging across various disciplines.

One of the disciplines in which an increasing development of city rankings and indexes takes effect is urban studies, specifically regarding sustainable and healthy cities. Since the publication of the Brundtland Report in 1987, sustainability and health have been dominant societal topics. Cities' expected growth and densification challenge achieving sustainable and healthy cities. Cities often lack green spaces and are hotspots of environmental pollution. Consequently, cities are predominantly identified as unsustainable and unhealthy. To that end, planning sustainable and healthy cities have gained importance over the years. For instance, the aim to plan sustainable and healthy cities is integral to the United Nations Sustainable Development Goals (SDGs) (Akande et al., 2019; McManus, 2012; Nieuwenhuijsen, 2020). Additionally, the 2019 European growth strategy, known as the European Green Deal, includes a set of policy proposals to enhance policies for a sustainable and healthy future (European Commission, 2019). On top of this, in the aftermath of the recent COVID-19 pandemic, planning sustainable and healthy cities to enhance resilience against epidemics (and pandemics) has gained importance and increased attention, both in academia, politics, and in the media (e.g., Jevtic et al., 2022; Reinink, 2020; Van Noort, 2020; Venderbos et al., 2023; World Health Organisation [WHO] Regional Office for Europe, 2021; Wray, 2021).

Considering the increased significance of and discussions about sustainable and healthy cities, it is unsurprising that city rankings and indexes are increasingly being developed regarding this area. City rankings and indexes are commonly used tools to evaluate performance in achieving sustainability and health: "the quest to improve the sustainability of cities often leads to the question of which cities are most

sustainable, thereby encouraging the formulation of metrics to compare cities on this criterion" (McManus, 2012, p.412).

However, despite the increased reliance on and development of city rankings and indexes in urban studies, limited research has been conducted on the impact of such city rankings and indexes on urban planning. Studies on city rankings and indexes in urban studies have rarely made "it into a well-established field of inquiry, debate or theorizing" (Acuto et al., 2021, p.368). Put differently, the increased reliance on and development of city rankings and indexes in urban studies did not lead to an increase in the academic literature on city rankings and indexes in urban studies. Consequently, there is a dominant concern that "the results of urban benchmarking studies [in other words, city rankings and indexes] are severely under-examined" (Acuto et al., 2021, p.368; Akande et al., 2019; McManus, 2012; Sáez et al., 2020). Therefore, I identified two major research gaps in the prior research and literature on city rankings and indexes (Miles, 2017).

Firstly, I identified an apparent knowledge gap in prior academic research regarding the impact of city rankings and indexes. Previous academic research primarily focused on city rankings and indexes in the education field, such as university rankings. The impact of city rankings and indexes in urban studies is largely unexplored (Acuto et al., 2021; Akande et al., 2019; McManus, 2012; Sáez et al., 2020). Secondly, I identified an empirical gap in the prior research. There is a lack of rigorous empirical research in prior academic literature focusing on the impact of city rankings and indexes in urban studies. The limited literature focusing on the impact of city rankings and indexes focuses on the potentials and limitations of city rankings and indexes using a theoretical and functionalist approach (e.g., Akande et al., 2019; Acuto et al., 2021; Giffinger et al., 2010; Jain & Hamel, 2022; Kitchin et al., 2015; Meijering, 2014; Sáez et al., 2020) There is limited empirical evidence supporting these limitations and potentials of city rankings and indexes for urban planning (Acuto et al., 2021; Knutsson et al., 2012; Sáez et al., 2020). As argued by McManus (2012, p.421): "while media outlets will report the scores, and compare cities in terms of rivalry, further research is needed to determine whether this has any significant influence on policy formulation and implementation". Various scholars emphasise the need to analyse the impact of city rankings and indexes for urban planning (e.g., Francis & Holloway, 2007; Knutsson et al., 2012; McManus, 2012; Sáez et al., 2020). As urban practitioners are said to increasingly rely on city rankings and indexes in their decision-making, these research gaps should be bridged rapidly to enhance awareness of the impact based on empirical evidence (Miles, 2017).

Considering these research gaps, this study explores the impact of city rankings and indexes for urban planning and assesses whether they stimulate transformations of urban environments. Specifically focusing on healthy urban environments. Accordingly, this study's objectives are as follows:

1. To identify and explain how city rankings and indexes shape urban planning;
2. To provide empirical evidence for the impact, regarding the limitations and potentials, of city rankings and indexes for the planning of healthy cities.

Accordingly, this study sets out to find an answer to the following research question:

How do city rankings and indexes impact the planning of healthy cities?

Following the research question and objectives, I approach the research problem by exploring one specific city ranking and index. I focus on a Dutch ranking called the 'Gezonde Stad Index' (English: Healthy City Index (HCI)), developed by Arcadis (Boon et al., 2022), to demarcate the research. The HCI was published for the second time in November 2022. The first edition was published two years prior, in 2020. The HCI received significant attention in the media, both locally and nationally (e.g., Keijzer, 2022; Langejan, 2022;

Nederlandse Omroep Stichting [NOS], 2022; Rosman, 2022). As the HCI was only recently published, this study does not aim to assess whether the publication of the HCI resulted in profound transformations of the urban environment. This exploratory study seeks to understand how city rankings and indexes impact the planning process of healthy cities rather than assessing outcomes.

This study is both academically and socially relevant. The study is academically relevant as it adds to and supports existing literature on the impact of city rankings and indexes in the field of urban studies by using an empirical instead of a theoretical approach. Additionally, this study contributes to making city rankings and indexes a better-established field of debate in urban studies. To the best of my knowledge, this study is among the first that intends to explore the impact of city rankings and indexes on the planning of healthy cities using an empirical approach. Therefore, this study may serve as a valuable guideline for future research. For those reasons, this study is of great value to academia. The study is socially relevant as it explores the impact of the boom in city rankings and indexes for (healthy) urban planning and, consequently, the transformation of urban environments. Moreover, this study enhances awareness among urban practitioners of the influence of city rankings and city rankings, and how they use them. By focusing on healthy cities, this study highlights a current societal problem and explores how city rankings might contribute to the planning of healthy cities. Lastly, this study is also valuable to the initiators of city rankings and indexes as it facilitates enhancing city rankings and indexes.

The study is structured into six chapters. The second chapter presents the literature review, discussing insights from existing literature on four main topics: (1) healthy cities, (2) city rankings and indexes, (3) city benchmarking, and (4) using evidence in urban planning. Based on these insights, a conceptual framework is presented. The third chapter elaborates on the methods used. In chapter four, the results are analysed. Lastly, subsequently in chapters five and six, the results are discussed and reflected on, and the research question is answered. Chapter six also includes recommendations for future research.

LITERATURE REVIEW

De Reehorst, Driebergen-Rijsenburg

Source: Arcadis Landscape Architects (n.d.-c)

2 Literature review

It is important to understand the research context to answer the research question. Therefore, this chapter elaborates on the research context by discussing the following four topics: (1) healthy cities, (2) city rankings and indexes, (3) city benchmarking, and (4) using evidence in planning. Discussing and relating these topics sheds light on the impact of city rankings and indexes the planning of healthy cities. The fifth section of this chapter summarises the literature review. The sixth section combines the topics in a conceptual framework to guide the remaining parts of this study.

2.1 Healthy cities

The health of a city's residents is "the most important asset of any city" (WHO, 2016, p.1). Being in good health is crucial for participating in society: "Health is essential for fostering good livelihoods, building a productive workforce, creating resilient and vibrant communities, enabling mobility, promoting social interaction, and protecting vulnerable populations" (WHO, 2016, p.1). However, cities face numerous challenges when improving residents' health. Some of the contemporary urban health challenges are the ageing population, (chronic) diseases, air and water pollution, heat stress, and mental well-being (Barton & Grant, 2013; Crane et al., 2021; Grant & Davis, 2019; Rijksinstituut voor Volkgezondheid en Milieu [RIVM], 2017). These urban health issues are related to broader urban challenges such as climate change, population growth, urban sprawl, and rising inequalities (Nieuwenhuijsen & Khreis, 2019). Accordingly, these challenges amount to how cities are designed and lived in (Crane et al., 2021; Nieuwenhuijsen & Khreis, 2019). Put differently, the social and physical environment influences residents' health. However, most cities do not meet the basic health needs of their residents (Rydin, 2012). Consequently, there is an increasing call to plan healthy cities and boost residents' health.

However, what constitutes a healthy city, and how does the notion of a healthy city relate to urban planning? Those are the questions answered in this chapter. Herewith, I shed light on what it means to plan a healthy city and serve as a foundation to analyse whether and how city rankings and indexes impact the planning of healthy cities. I first discuss what a healthy city constitutes. After that, I discuss the relationship between health and urban planning. In doing so, I discuss the increased importance and challenges of planning healthy cities.

2.1.1 Defining a healthy city

Research shows that there is no universal definition of a healthy city (Boon, 2020; Crane et al., 2021; Riley & De Nazelle, 2019). The conceptualisation of a healthy city differs depending on profession and aspirations. For example, an environmentalist approaches health from an ecological perspective, while a caretaker approaches health from a human well-being perspective (Riley & De Nazelle, 2019; RIVM, 2018c; Schram-Bijkerk et al., 2016). To illustrate this point, the ten types of healthy cities identified by Van Wesemael and De Bont (2013) serve as an example (Figure 1). The types, grouped into four themes, show that aspirations and ambitions shape the conceptualisation of a healthy city, and vice-versa (Morris et al., 2019; Schram-Bijkerk et al., 2016).

One of the more commonly used definitions of a healthy city is from the World Health Organisation (WHO). The WHO (n.d., par. 1) defines a healthy city as a city "that continually creates and improves its physical and social environments and expands the community resources that enable people to mutually support each other in performing all the functions of life and developing to their maximum potential". Evidently, the WHO defines a healthy city as a process of achieving better health for residents rather than a particular outcome or status quo.

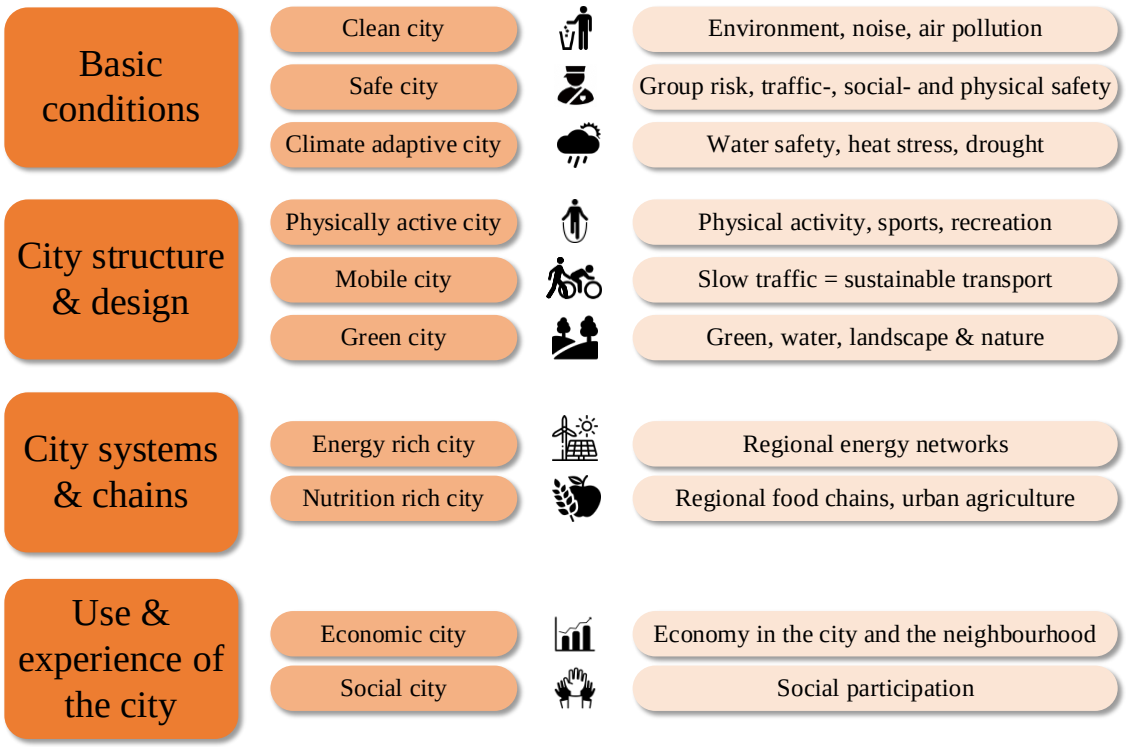


Figure 1 Ten types of healthy cities (based on Wesemael and De Bont (2013))

As becomes apparent, the many conceptualisations of a healthy city range across certain 'main dimensions'. A healthy city needs to protect its residents against health risks while also enhancing their health by facilitating an environment that stimulates healthy behaviours (Hoorn et al., 2022; Raad voor de leefomgeving en infrastructuur [Rli], 2018).

2.1.2 Planning of healthy cities

Having established what (can) constitute a healthy city, this section explores how healthy cities can be achieved through urban planning. The literature reveals that urban planning and health have a long history. Beginning in the nineteenth century, urban planning played a crucial role in improving the health of the crowded-living industrial workers by, for example, building sewage systems and providing sufficient housing. In the twenty-first century, urban planning remains to play a vital role in achieving health, but now focuses on sustainability (Barton et al., 2009; Crane et al., 2021; Freestone & Wheeler, 2015; Rydin, 2012). The planning of healthy cities has gained importance over the years due to contemporary issues such as the increased pressure on the environment, urban densification, and the COVID-19 pandemic (Nieuwenhuijsen, 2020; Reinink, 2020). Though, the increased importance does not mean urban plans are always made to favour health. For example, car-dependent cities expose residents to higher levels of air pollution and noise, while cities focusing on active mobility entice residents to exercise. An additional illustration, more accessible green spaces in a city may reduce residents' stress and enforce social interaction, while cities with less accessible green spaces may increase morbidity (Barton et al., 2009; Nieuwenhuijsen & Khreis, 2019). Urban planning, therefore, has an ambivalent relationship with health, meaning that health is an input as well as an outcome of urban planning and can simultaneously increase and decrease health risks (UN-Habitat &WHO, 2020). To be specific, health depends on how the city is designed and lived in. (Crane et al., 2021; Nieuwenhuijsen & Khreis, 2019).

To help understand the complex relationship between urban planning and health, Barton (2005) (adjusted by Barton and Grant in 2006) created the 'health map', also called the 'settlement health map'. This map (Figure 2) is inspired by the widely cited model of Whitehead and Dahlgren (1991) and visually describes the main determinants of health and well-being in neighbourhoods. In line with the United Nations (UN) sustainable development approach, this map puts people in the centre of the map:

> In line with the anthropogenic UN definition of sustainable development people are put at the heart of the model … It is their needs and opportunities, their health and well-being, their inclusion or exclusion, the quality of life and environment that they experience that are of prime concern. (Barton, 2005, p.353)

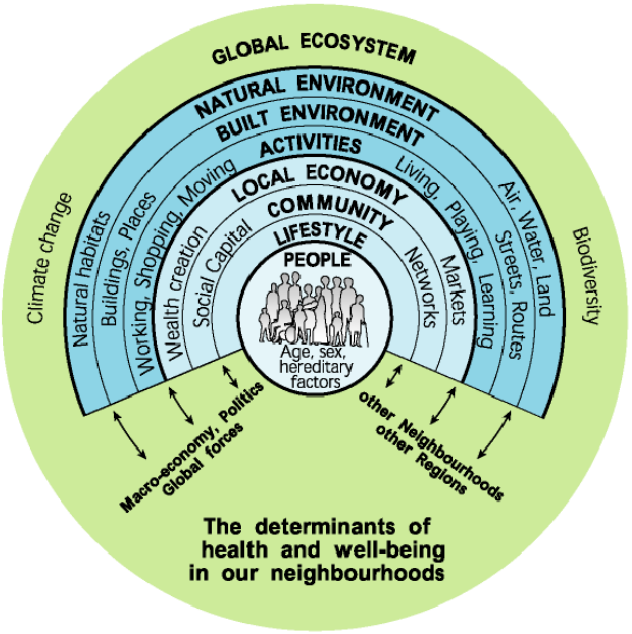


Figure 2 The health map (source: Barton and Grant (2006))

The model approaches health with an ecosystem approach. Health is multi-dimensional and determined by the social, economic, and environmental domains. The map shows a nested relationship of seven spheres dynamically interacting and influencing each other (Barton, 2005; Barton et al., 2009):

1. **People.** This sphere concerns the individual behaviours of people, such as healthy or unhealthy lifestyles and cultural values. Urban planning has limited impact on this sphere, and is mostly indirect through the quality, distribution, and accessibility of places in the neighbourhood, such as shops promoting healthy lifestyles.
2. **Community.** This sphere concerns social capital regarding social networks, social inclusion, environmental equity, and empowerment. Urban planning impacts this sphere by providing places that stimulate social interaction, such as sports clubs or parks.
3. **Local economy.** This sphere concerns the extent to which a neighbourhood stimulates and provides access to employment opportunities, and income. The local economy is what drives neighbourhoods economically. Urban planning has little impact on this sphere; only by considering the local economy while planning.
4. **Activities.** This sphere concerns the kind, availability, accessibility, quality, and viability of activities in the neighbourhood. Urban planning plays a role in this sphere by ensuring that the range

of activities matches residents' needs, and that activities are performed in a healthy and sustainable environment.

5. **Built environment.** This sphere concerns the construction of the places where activities take place, such as buildings, parks, and places of movement, such as streets. In this sphere, urban planning exerts direct influence. It affects what activities can take place and how accessible they are to residents. Put differently, this sphere affects all other spheres.
6. **Natural environment.** This sphere concerns the local environment the neighbourhoods are part of. The local natural environment could increase health risks through, for example, air and water pollution due to nearby industry. Urban planning mainly influences this sphere through the built environment sphere.
7. **Global ecosystem.** This is the overarching sphere and concerns the global system of which the neighbourhoods are part. In this sphere, issues such as global climate change due to emissions play a significant role.

The model by Barton and Grant (2006) helps to understand the multi-dimensionality of health and the role of urban planning in either increasing or decreasing health risks (Barton, 2005; Barton et al., 2009). It informs about the complex relationship and shows that urban planning has indirect impacts on the various facets of health:

> It shows planners, and other actors in the play of spatial development, how they fit into the overall patterns. In this context, the role of planners and designers is to be experts in the way the physical fabric of settlements evolves and affects other variables. (Barton, 2005, p.352)

To summarise, as illustrated by the model of Barton and Grant (2006), urban planning significantly impacts health. The impact urban planning has on health is multi-faceted. Consequently, domains should collaborate to address health risks and improve health (Grant & Davis, 2019).

2.1.2.1 Examples of the increased importance of healthy cities

The impact urban planning has on health is increasingly acknowledged on a global, national, and local scale. Across these scales, there are several attempts and initiatives to increase awareness of the impact of urban planning on planning healthy cities. This section provides examples of the growing importance of planning healthy cities to show this.

On a global scale, the WHO European Healthy Cities Network (WHO-EHCN) serves as an example. The WHO-EHCN was launched in 1987-1988. The network was established based on the growing conviction that urban planning significantly impacts health and that health should be a central goal of urban planning (Barton et al., 2009; Barton & Grant, 2013; Tsouros, 2019). Evidence-based assessment and evaluation of cities' commitment to making their city healthy play a vital role in the WHO-EHCN (Tsouros et al., 2015). The WHO-EHCN operates in 5-year cycles, called phases, to allow for regular renewal of the network's objectives and for new members to become part of the network (Tsouros, 2019). They are currently in phase VII (2019-2024) (WHO Regional Office for Europe, 2019). A couple of phases earlier, in phase IV (2003-2007), the 'Healthy Urban Planning' (HUP) concept was developed. The HUP concept is based on twelve agreed principles that each planner should adopt (Box 1).

Box 1 The twelve goals of the WHO-EHCN (based on Barton et al. (2009) and Barton and Grant (2013))

The twelve goals of the WHO-EHCN

1. Promoting healthy lifestyles (especially regular exercise);
2. Facilitating social cohesion and supportive social networks;
3. Promoting access to good quality housing;
4. Promoting access to employment opportunities;
5. Promoting accessibility to good quality facilities (educational, cultural, leisure, retail, and health care);
6. Encouraging local food production and outlets for healthy food;
7. Promoting safety and a sense of security;
8. Promoting equity and the development of social capital;
9. Promoting an attractive environment with acceptable noise levels and good air quality;
10. Ensuring good water quality and healthy sanitation;
11. Promoting the conservation and quality of land and mineral resources; and
12. Reducing emissions that threaten climate stability.

More recently, in 2020, the UN-Habitat and the WHO (2020) published a sourcebook titled '*Integrating health in urban and territorial planning'*. This sourcebook provides information on how to approach urban and territorial planning using a health perspective. It tries to show professionals how health can be enhanced through urban and territorial planning.

On a national scale, the Netherlands, the 'Landelijke Nota Gezondheidsbeleid 2020-2024' serves as an example. In this Nota, health in the physical and social environment is one of the key issues discussed. It shows the growing importance of planning in addressing health issues on a national level (Reinink, 2020). Moreover, in 2019, the 'Ontwerp Nationale Omgevingsvisie' (NOVI) was presented. One of the priorities in the NOVI is the development of healthy cities (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties [Ministerie van BZK], 2019).

On a local scale, municipalities have different policies and visions on integrating urban planning and health. These plans and visions are based on national programs and policies, adapted to the local health problems. With the planned introduction of the new Environment and Planning Act in January 2024, municipalities get new opportunities to integrate urban planning and the physical environment (Vereniging van Nederlandse Gemeenten [VNG], 2020).

In summary, irrespective of the organisational level, it is apparent that the health component of urban planning has gained importance. Consequently, health is increasingly integrated into policies, influencing how cities are planned.

2.1.2.2 The challenges of planning healthy cities

However, the growing importance of and attention given to planning healthy cities does not mean planning healthy cities goes without challenges. It is important to understand the complexity of planning healthy cities by discussing the challenges that complicate it. Understanding the challenges of planning healthy cities helps to identify how city rankings and indexes may help to overcome these challenges. The literature shows that the challenges of planning healthy cities can be attributed to the multi-dimensionality and complexity of urban health issues, and the political nature of planning processes.

Multi-dimensionality and complexity of urban health issues. Urban health issues are not domain-specific; they are a shared responsibility across domains (Barton & Grant, 2013; Crane et al., 2021; Rli,

2018; Rydin, 2012). However, cross-domain cooperation and coordination between domains are often lacking (Barton et al., 2009; Rli, 2018). This results in a fragmented approach due to 'siloism', where stakeholders are isolated within their silos/sectors. This fragmented approach, combined with a lack of regulations, lack of clear responsibilities, limited resources, capacity constraints, and lack of knowledge on how to plan a healthy city effectively, leads to the planning issue of healthy cities being overseen (Crane et al., 2021; Riley & De Nazelle, 2019; Rli, 2018; Rydin, 2012; UN-Habitat & WHO, 2020). In other words, an inertia of action occurs (Crane et al., 2021; Kemp et al., 2007; Riley & De Nazelle, 2019). Moreover, siloism leads to narrow understandings of what constitutes a healthy city, resulting in conflicting interests, which challenges an integrated planning approach (Crane et al., 2021; Riley & De Nazelle, 2019). To explain this point, Riley and De Nazelle (2019, p.644) illustrate the following: "Taxi drivers, for instance, may oppose policies to restrict movement of vehicles in city centres, residents may oppose more stringent parking rules and local businesses may challenge attempts to pedestrianise connecting roads for fear of losing business." As such, planning healthy cities also involves addressing residents' behaviour. However, changing deeply rooted social norms is a complex matter and is often ineffective in the longer term (Barton, 2005; Barton et al., 2009; Barton & Grant, 2013; Crane et al., 2021).

Political nature of planning processes. Related to the multi-dimensionality and complexity of urban health issues, the political nature of planning processes further complicates the planning of healthy cities. Planning is a political process in which interests conflict and compete to be a priority on the political agenda: "it cannot be taken for granted that better health outcomes will be leading planning policy priority given the competition for other pressing agenda items" (Crane et al., 2021; Rydin, 2012, p.XV). Inevitably, trade-offs between urban issues need to be made regarding resource allocation and prioritisation of interests. However, the choices in such trade-offs are not neutral, and some societal groups have more powerful voices than others (Riley & De Nazelle, 2019). Additionally, for effectively planning a healthy city, cities depend on what the market can deliver: "cities are still struggling with the more strategic and holistic approach … they are hampered by … evolving spatial form which is driven by 'what the market can deliver'. Such barriers militate against any form of integrated working" (Barton & Grant, 2013, p.S140). Moreover, the planning of healthy cities spans multiple political cycles, meaning that various political administrations address the issue (Kemp et al., 2007; Riley & De Nazelle, 2019). Due to a potential shift in political focus, political administrations may address urban health issues differently; what the previous political administration accomplished can either be continued, stagnated, or reversed by the current political administration. To sustain progress, strong leadership in decision-making is required. The planning of healthy cities may demand controversial and bold decisions disliked by the public. However, these decisions are often evaded because of a potential loss of political capital (Riley & De Nazelle, 2019). This results in favouring short-term interventions that please the public over interventions that displease in the short term but are necessary for the long term (Kemp et al., 2007).

In essence, planning healthy cities is complicated by several challenges. It can be inferred that fundamental changes in organisational structures are required to address these challenges. Addressing urban health issues is mainly driven from the top, but if the top does not commit to prioritising health and encouraging cross-domain collaboration, it complicates the planning of healthy cities (Barton & Grant, 2013; Barton et al., 2009; Crane et al., 2021; Riley & De Nazelle, 2019).

2.2 City rankings and indexes

In the current dynamic and globalised economy, cities need an outstanding position to attract investments and create wealth. In this context, there is a remarkable growth in the appearance of city rankings and indexes (Acuto et al., 2021; Akande et al., 2019; Giffinger et al., 2010; Sáez et al., 2020). The development of city rankings and indexes has increased exponentially since the mid-2000s (Acuto et al., 2021).

However, how are city rankings and indexes developed, by whom, and what are their limitations and potentials? Those are the topics discussed in this chapter. First, I discuss how city rankings and indexes are developed. Then, I elaborate on the limitations and potentials. Thereby, I shed light on how city rankings and indexes may impact the planning of healthy cities.

2.2.1 Development of city rankings and indexes

City rankings and indexes exist for various topics, also referred to as the ranking attribute. The ranking attribute is decomposed into several indicators (Meijering et al., 2014). Indicators are quantitative or qualitative measures, and reflect observed facts (Sáez et al., 2020). Most city rankings and indexes assess certain domains, existing of multiple indicators. This means that the domains are composite indicators. Composite indicators are aggregations of single indicators (the separate characteristics). Composite indicators measure complex and intangible issues which are not measurable through single indicators (Sáez et al., 2020). Each composite indicator measures a particular aspect of the ranking attribute (Meijering et al., 2014). The values of these composite indicators are generated by aggregating the values of the single indicators they are composed of. Following, the value for the particular ranking attribute is generated by aggregating the composite indicators into a composite index (Acuto et al., 2021; Meijering et al., 2014). The indicator values must be expressed in the same measurement scale and/or unit to be aggregated. In other words, it is important to normalise indicator values (Meijering et al., 2014; Sáez et al., 2020). Aggregating the indicators into a composite index allows for a rating for the ranking attribute. A ranking is then created by ordering all the ratings for the cities ranked, in most cases, from highest to lowest or best to worst scoring (Acuto et al., 2021; Meijering et al., 2014; Sáez et al., 2020). Figure 3 illustrates the different phases of developing city rankings and indexes. However, it is important to acknowledge that the aforementioned is a general and technical explanation of how city rankings and indexes are developed. City rankings and indexes vary greatly in, among other things, method, purpose, results presentation, sample size, scope, and regularity (Giffinger et al., 2010; Portugal, 2019).

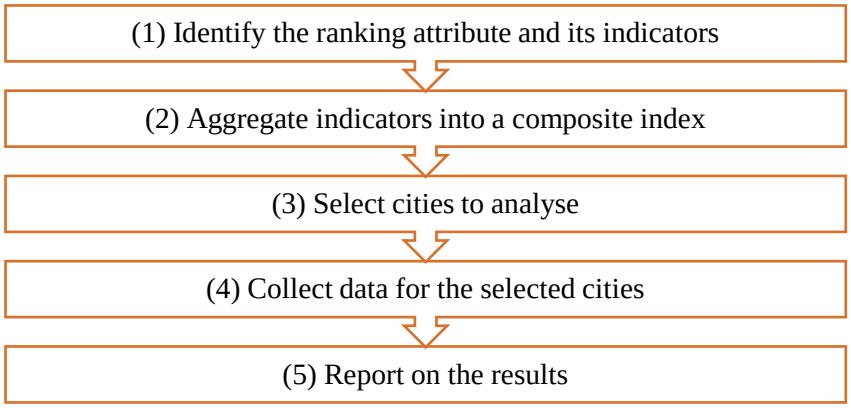


Figure 3 Phases of development of city rankings and indexes (based on Meijering et al. (2014))

Generally, the development of city rankings and indexes involves two groups of stakeholders, setting aside the group needed to collect specific data. The stakeholders are the initiators and the users.

Initiators. The estimated percentages of those who develop city rankings are as follows:

> almost 25% ... are authored by professional services firms, including those providing urban or built environment services. Most of these come from consultancies … Another 15% are authored by global media and travel groups … Further down the list, real estate and advisory firms … and financial, insurance and investment firms … each account for around 10% … while industry bodies … supranational organizations … and software and telecoms providers … each account for around 5% ... Only 1% … appear to be produced by city and regional advocacy groups or city governments themselves. This means that, overall, approximately 8–10% … originate from public sector institutions and organizations. (Acuto et al., 2021, p.371)

Noticeably, most city rankings and indexes are developed by the private sector (market organisations). For the private sector, developing city rankings and indexes is a means to market the firm and attract new clients: "Customers and potential clients that want more detail will likely pay for it, giving these firms … opportunity to sell both their data and services, advising municipal governments directly on how their cities can compete better, rise in the ranks" (Jain & Hamel, 2022; Leff & Petersen, 2015, p.9). This also means city rankings and indexes often align with the firm's goals. To address this, scholars call for a more prominent role for academia in developing city rankings and indexes by, for example, providing (counter-)evidence and spreading information (Acuto et al., 2021; Leff & Petersen, 2015).

Users. The three categories of users are (1) initiators, (2) urban practitioners, and (3) academia. For each category, city rankings and indexes serve a different purpose. Initiators may use them to market their firm, urban practitioners may use them to identify a city's weaknesses and for city branding, and academia may use them as a data source for research. Thus, city rankings and indexes are valuable tools for different disciplines (Jain & Hamel, 2022; Sáez et al., 2020).

2.2.2 Limitations and potentials of city rankings and indexes

Though city rankings and indexes are a tool of use for different disciplines, they are accompanied by several limitations. Below, I discuss the limitations and potentials of city rankings and indexes. This discussion sheds light on how prior literature perceived the limitations and potentials of city rankings and indexes.

2.2.2.1 Limitations

In this section, I discuss the limitations of city rankings and indexes found in the prior literature. The literature typically focused on the limitations from a methodological perspective. For each limitation, a short explanation is given. At the end of the section, the limitations are summarised.

Issues with data comparability. The distinctive characteristics of cities in terms of, for example, population size, urban history and their global and national position make comparing them complex. Also, cities might measure indicators in various ways. Therefore, mainly for international city rankings and indexes, it is complex to find comparable data (White & Kitchin, 2021). City rankings and indexes without a homogenous selection of cities are criticised for "comparing apples with oranges" (Meijering et al., 2014, p.134). Overall, city rankings and indexes are criticised for their issues with data comparability (Acuto et al., 2021; Akande et al., 2019; Giffinger et al., 2010; Leff & Petersen, 2015; Luque-Martínez & Muñoz-Leiva, 2005; Meijering et al., 2014; Sáez et al., 2020; White & Kitchin, 2021).

Generalist approach – decontextualization. Related to the limitation above, city rankings and indexes decontextualize cities by viewing them as a single system instead of part of a larger ecosystem (Acuto et al.,

2021; Giffinger et al., 2010; Jain & Hamel, 2022; Kitchin et al., 2015; Sáez et al., 2020). Consequently, city rankings and indexes are criticised for their generalist approach:

> rankings typically attempt to condense a large amount of information into a final score … [so] they attempt to measure urban characteristics against 'what is best', ignoring the fact that different activities require different urban conditions. (Acuto et al., 2021, p.369)

Suggestion of non-existing large differences. While city rankings and indexes may suggest large differences between cities, these differences may be relatively small and negligible when looking at the composite index values (Acuto et al., 2021; Giffinger et al., 2010; Meijering et al., 2014). Often, the highest-ranked and lowest-ranked cities are separated by a small difference:

> rank numbers indicate if an object performs better or worse than another object, but they do not provide any information concerning the extent to which an object performs better or worse than another object … even when the ranks of two objects are wide apart, the difference between their actual attribute values may still be very small. (Meijering et al., 2014, p.132).

Obscuring of metadata. City rankings and indexes tend to obscure metadata, limiting their usefulness. Metadata concerns data about "the provenance, collation, calculation, verification and context of indicators" (White & Kitchin, 2021, p.386).

Tool of global capitalism. City rankings and indexes are critiqued to be a tool of global capitalism, meaning that they stimulate inter-city competition. Additionally, as city rankings and indexes mainly focus on winning and losing cities, they intend to increase, rather than decrease, existing unevenness in power and investment between cities (Acuto et al., 2021; McManus, 2012; White & Kitchin, 2021).

Highlighting cities in a technical manner. City rankings and indexes are criticised for their technical nature as they are composed of indicators and numerical values. City rankings and indexes focus on facts, while perception and qualitative factors are often omitted. If qualitative factors are used, they are quantified. This can result in misinterpretation of the city ranking or index. Consequently, the technical nature of city rankings and indexes oversimplifies cities into numerical values (Kitchin et al., 2015; Leff & Petersen, 2015; McManus, 2012; Meijering et al., 2014; Portugal, 2019; White & Kitchin, 2021).

Focus on measurements and indicators. City rankings and indexes stimulate cities to use measurements and indicators to manage the urban environment. This potentially leads to "wasteful gaming-strategies, a culture of compliance, a concern that short-term goals take priority over long-term necessities … and a focus solely on 'what counts'" (Sáez et al., 2020, p.2). Moreover, the focus on measurements and indicators to score high on city rankings and indexes may incite cities to manipulate data (Acuto et al., 2021; Giffinger et al., 2010; Meijering et al., 2014; Sáez et al., 2020).

Lack of a standard and transparent methodology. Each city ranking and index applies its own methodology regarding city selection, aggregating and normalising indicators. City rankings and indexes often do not transparently or detailly report their methodology. However, the techniques chosen for the methodology affect the outcome. The lack of a standard and transparent methodology is criticised for affecting the credibility, objectivity and understanding of city rankings and indexes and their scoring system, consequently, their usefulness (Acuto et al., 2021; Akande et al., 2019; Giffinger et al., 2010; Jain & Hamel, 2022; Leff & Petersen, 2015; Meijering et al., 2014; Sáez et al., 2020).

Lack of a clear purpose. City rankings and indexes are criticised for the lack of a clear purpose as they often, without telling, relate to the goals of the initiators of the city ranking or index. This relates to the

question and criticism for whom the city rankings and indexes are developed and for what purpose (Acuto et al., 2021; Leff & Petersen, 2015; Sáez et al., 2020).

Lack of (results of) sensitivity analyses. Sensitivity analyses of city rankings and indexes are needed to assess the robustness of the outcomes. However, for most city rankings and indexes, they are not performed, nor made publicly available, affecting their credibility and usefulness (Meijering et al., 2014; Sáez et al., 2020).

Lack of a clear definition of the ranking attribute. The lack of a clear definition of the ranking attribute complicates understanding what cities were ranked on. It also affects the justification of the selected indicators. The selected indicators may be biased as they often reflect the initiator's perspective. However, most ranking attributes are difficult to operationalise because they are intangible or politically coloured concepts. Therefore, for some ranking attributes, reaching a consensus on a precise definition is complicated (Akande et al., 2019; Leff & Petersen, 2015; Luque-Martínez & Muñoz-Leiva, 2005; Meijering et al., 2014).

Using for showing off. City rankings and indexes are criticised for being used to show off. Most of the time, only the final rank is paid attention to while ignoring that there is still room for improvement and/or a need to change (Giffinger et al., 2010; Leff & Petersen, 2015).

Lack of measuring the progress of a city's own goals. City rankings and indexes assess a city's status quo at a given time. However, whilst a city can make progress related to its own goals, that same city may be ranked lower in a new edition of a city ranking or index. Critics say it would benefit to compare cities to their past performance, goals, and targets (Leff & Petersen, 2015; McManus, 2012; White & Kitchin, 2021).

Representation of the 'usual suspects'. City rankings and indexes tend only to include the 'usual suspects', meaning global cities. Smaller cities are often excluded and ignored. This may be due to a lack of data availability for smaller cities. Nevertheless, only representing the 'usual suspects' gives a distorted view of reality (Acuto et al., 2021; Jain & Hamel, 2022).

Lack of public involvement in the development. City rankings and indexes are criticised for lacking public involvement in data gathering. Most city rankings are based on secondary data; residents, authorities, and academia need more consulting. They can provide additional information and/or review city rankings and indexes based on their perceptions (Acuto et al., 2021; Jain & Hamel, 2022).

Lack of triggering to learn from other cities. The results of city rankings and indexes are argued to not trigger inter-city collaboration due to only focusing on the winning and losing cities: "city rankings typically attract attention for winning or losing cities … This could be because of the way producers showcase best to worst performing cities, rather than listing them in a way that could trigger learning for cities" (Jain & Hamel, 2022, section lack of learning for other cities).

Neglect of complex interrelations and causalities. City rankings and indexes use a selection of indicators to rank cities for the chosen ranking attribute. Moreover, indicators may vary in their contribution to the ranking attribute, and the relationships between indicators are often ignored. This limitation is closely related to the limitation of decontextualization: "rankings wrongly imply that cities are independent, simple, closed systems which are unrelated to their hinterland and can be totally understood via a single ranking number" (Acuto et al., 2021, p. 370). Consequently, city rankings are criticised for neglecting complex interrelations and causalities (Acuto et al., 2021; Akande et al., 2019; Giffinger et al., 2010; Portugal, 2019).

In Table 1, the limitations of city rankings and indexes are summarised.

Table 1 Limitations of city rankings and indexes

No.	Limitation	Source
1	Issues with data comparability	Acuto et al. (2021), Akande et al. (2019), Giffinger et al. (2010), Leff and Petersen (2015), Luque-Martínez and Muñoz-Leiva (2005), Meijering et al. (2014), Sáez et al. (2020), and White and Kitchin (2021).
2	Generalist approach – decontextualization	Acuto et al. (2021), Giffinger et al. (2010), Jain and Hamel (2022), Kitchin et al., 2015; and Sáez et al. (2020).
3	Suggestion of non-existing large differences	Acuto et al. (2021), Giffinger et al. (2010), and Meijering et al. (2014).
4	Obscuring of metadata	White and Kitchin (2021).
5	Tool of global capitalism	Acuto et al. (2021), McManus (2012), and White and Kitchin (2021).
6	Highlighting cities in a technical manner	Kitchin et al. (2015), Leff and Petersen (2015), McManus (2012), Meijering et al. (2014), Portugal (2019), and White and Kitchin (2021).
7	Focus on measurements and indicators	Acuto et al. (2021), Giffinger et al. (2010), Meijering et al. (2014), and Sáez et al. (2020).
8	Lack of a standard and transparent methodology	Acuto et al. (2021), Akande et al. (2019), Giffinger et al. (2010), Jain and Hamel (2022), Leff and Petersen (2015), Meijering et al. (2014), and Sáez et al. (2020).
9	Lack of a clear purpose	Acuto et al. (2021), Leff and Petersen (2015), and Sáez et al. (2020).
10	Lack of (results of) sensitivity analyses	Meijering et al. (2014), and Sáez et al. (2020).
11	Lack of a clear definition of the ranking attribute	Akande et al. (2019), Leff and Petersen (2015), Luque-Martínez and Muñoz-Leiva (2005), and Meijering et al. (2014).
12	Using for showing off	Giffinger et al. (2010), and Leff and Petersen (2015).
13	Lack of measuring the progress of a city's own goals	Leff and Petersen (2015), McManus (2012), and White and Kitchin (2021).
14	Representation of the 'usual suspects'	Acuto et al. (2021), and Jain and Hamel (2022).
15	Lack of public involvement in the development	Acuto et al. (2021), and Jain and Hamel (2022).
16	Lack of triggering to learn from other cities	Jain and Hamel (2022).
17	Neglect of complex interrelations and causalities	Acuto et al. (2021), Akande et al. (2019), Giffinger et al. (2010), and Portugal, (2019).

2.2.2.2 Potentials

In this section, I discuss the potentials of city rankings found in the prior literature. The literature typically focused on the potentials for cities and urban practitioners. For each potential, a short explanation is given. At the end of the section, the potentials are summarised.

Tool of global capitalism. City rankings and indexes as a tool of global capitalism is also mentioned as a potential. City rankings and indexes can enforce healthy competition by stimulating public discussion about the ranking attribute, such as what is a healthy or sustainable city. Additionally, through media coverage, city rankings and indexes make cities visible on the global stage and help to market the city to attract talent and investments (Acuto et al., 2021; Giffinger et al., 2010; Jain & Hamel, 2022; Kitchin et al., 2015; Leff & Petersen, 2015; McManus, 2012; White & Kitchin, 2021).

Management of the urban environment (development, planning and policymaking). Among other things, city rankings and indexes can help cities with the following:

- Defining goals and strategies for urban development and policies;
- Evaluation and monitoring of urban policies;
- Allocation and prioritising of resources, funding, and investment;
- Improving a city's understanding of its performance on the local, national, and global stage;
- Triggering public discussions about development strategies and urban policies;
- Legitimising governmental decisions and actions;
- Identifying strengths and weaknesses, consequently, points of improvement and underlying causes;
- Holding the government accountable for their decisions and actions.

Considering this, city rankings and indexes have the potential to enhance urban management, meaning development, planning and policymaking (Acuto et al., 2021; Akande et al., 2019; Giffinger et al., 2010; Kitchin et al., 2015; Leff & Petersen, 2015; Luque-Martínez & Muñoz-Leiva, 2005; McManus, 2012; Meijering et al., 2014; Portugal, 2019; Sáez et al., 2020).

Support of stakeholders in choice location. City rankings and indexes can potentially guide stakeholders in their choice of location. On the one hand, city rankings and indexes attract stakeholders to locate their firms in a specific city. On the other hand, they show which cities have the potential to improve on a particular ranking attribute and are likely to accept services that stakeholders offer (Giffinger et al., 2010; Kitchin et al., 2015; McManus, 2012; Portugal, 2019; Sáez et al., 2020).

Stimulation of inter-city learning and collaboration. City rankings and indexes can stimulate inter-city learning and collaboration by, for instance, sharing best practices. Sharing best practices can help cities underperforming on a particular topic learn from cities performing well on the same topic. It simultaneously stimulates collaboration and engagement between cities. Therefore, city rankings and indexes also have the potential to inspire cities and build up collaborative city networks and/or show the importance of being part of a city network in terms of goal setting and making progress (Acuto et al., 2021; Giffinger et al., 2010; Jain & Hamel, 2022; Meijering et al., 2014; Portugal, 2019).

Communication of complex phenomena in an easy and understandable way. While a limitation of city rankings and indexes is highlighting cities in a technical manner, this is also a potential. The technical presentation of cities in city rankings and indexes enhances understanding of complex phenomena by presenting them in an easy and communicable way (Jain & Hamel, 2022; McManus, 2012).

Positive 'naming and shaming'. City rankings and indexes can make cities, residents, and the private sector aware of a city's weaknesses while simultaneously encouraging them to address those weaknesses (McManus, 2012).

Stimulation of public interest in the city. City rankings and indexes can, often due to media coverage, spark public interest in the city, resulting in public discussions and an increase in public participation in planning (Acuto et al., 2021; Giffinger et al., 2010; Jain & Hamel, 2022; Kitchin et al., 2015; Portugal, 2019; Robin, 2021). This potential is closely related to city rankings and indexes' ability to present complex phenomena easily and communicably.

Show retrospective and prospective progress. City rankings and indexes have the potential to include a prospective dimension based on a city's current plans to improve: "Based on the city action plans … projections can be made ... This could generate greater interest, learning, and invite policymakers from other cities to make better commitments or plans in their cities" (Jain & Hamel, 2022, section incorporating retrospective and prospective dimensions). Additionally, city rankings and indexes have the potential to compare cities against their past performance and show their progress (Jain & Hamel, 2022; Leff & Petersen, 2015; McManus, 2012; White & Kitchin, 2021).

The potentials of city rankings and indexes are summarised in Table 2.

Table 2 Potentials of city rankings and indexes

No.	Potential	Source
1	Tool of global capitalism	Acuto et al. (2021), Giffinger et al. (2010), Jain and Hamel (2022), Kitchin et al. (2015), Leff and Petersen (2015), McManus (2012), and White and Kitchin (2021).
2	Management of the urban environment (development, planning and policymaking)	Acuto et al. (2021), Akande et al. (2019), Giffinger et al. (2010), Kitchin et al. (2015), Leff and Petersen (2015), Luque-Martínez and Muñoz-Leiva (2005), McManus (2012), Meijering et al. (2014), Portugal (2019), and Sáez et al. (2020).
3	Support of stakeholders in choice location	Giffinger et al. (2010), Kitchin et al. (2015), McManus (2012), Portugal (2019), and Sáez et al. (2020).
4	Stimulation of inter-city learning and collaboration	Acuto et al. (2021), Giffinger et al. (2010), Jain and Hamel (2022), Meijering et al. (2014), and Portugal (2019).
5	Communication of complex phenomena in an easy and understandable way	Jain and Hamel (2022), and McManus (2012).
6	Positive 'naming and shaming'	McManus (2012).
7	Stimulation of public interest in the city	Acuto et al. (2021), Giffinger et al. (2010), Jain and Hamel (2022), Kitchin et al (2015), and Portugal (2019).
8	Show retrospective and prospective progress	Jain and Hamel (2022), Leff and Petersen (2015), McManus (2012), and White and Kitchin (2021).

2.2.2.3 Summary of the limitations and potentials

The limitations and potentials are summarised in Table 3. A review of city rankings and indexes' limitations and potentials makes the following evident. The limitations and potentials can be classified into two categories: (1) methodology and (2) practical use. The limitations mainly concern the first group, while the potentials primarily concern the second group. It is also evident that city rankings and indexes are more often criticised for their limitations than praised for their potentials. Moreover, the limitations concern the methodology and the nature of city rankings and indexes, including the competitive nature and the purpose of city rankings and indexes. The potentials are about the added value for the cities included in the ranking or index. As can be deduced from the limitations and potentials, most are subjective and have to do with attitudes and opinions toward city rankings and indexes.

Table 3 Limitations and potentials of city rankings and indexes

Limitation	Potential
Issues with data comparability	Tool of global capitalism
Generalist approach – decontextualization	Management of the urban area (development, planning and policymaking)
Suggestion of large differences that do not exist	Support of stakeholders in choice location
Obscuring of metadata	Stimulation of inter-city learning and collaboration
Tool of global capitalism	Communication of complex phenomena in an easy and understandable way
Highlighting cities in a technical manner	Positive 'naming and shaming'
Focus on measurements and indicators	Stimulation of public interest in the city
Lack of standard and transparent methodology	Show retrospective and prospective progress
Lack of clear purpose	
Lack of (results of) sensitivity analyses	
Lack of clear definition of the ranking attribute	
Using for showing off	
Lack of measuring progress of a city's own goals	
Representation of the 'usual suspects'	
Lack of public involvement in the development	
Lack of triggering to learn from other cities	
Neglect of complex interrelations and causalities	

2.2.3 Linking the potentials and limitations of city rankings and indexes

What becomes evident is that the limitations of city rankings and indexes are related to their potentials: "the usefulness of any ranking largely depends on how it reports its methodology" (Meijering et al., 2014, p.141). Misinterpretation and misapplication of the results are deemed to happen when urban practitioners do not acknowledge the methodological limitations. Whilst frequently thought, the results of a city ranking or index can often not directly be applied to policies (Acuto et al., 2021; Meijering et al., 2014). For that reason, scholars argue that the results should first be put into context before using them as policy advice. This means that the qualities of a city ranking or index, as well as the local context of a city, should be taken into consideration first. In that context, scholars also encourage cities to conduct their own analyses (Giffinger et al., 2010; Leff & Petersen, 2015). City rankings should only support urban practices:

> Ranking is not, or should not, be an end in itself. It is a means to an end, which varies between organizations participating in ranking schemes. … actions should be enhanced, regardless of the existence or otherwise of … ranking systems. (McManus, 2012, p.421)

Though city rankings and indexes should be considered cautiously concerning their methodological limitations, it should be noted that city rankings and indexes largely deviate in their methodological characteristics (Acuto et al., 2021; Giffinger et al., 2010; Leff & Petersen, 2015; Meijering et al., 2014). Nevertheless, based on the limitations, the most potential in improving city rankings and indexes lies in enhancing the (transparency of) methodologies (Acuto et al., 2021; Jain & Hamel, 2022; Meijering et al., 2014). Developing city rankings and indexes is an evolving process (Leff & Petersen, 2015). The potentials can be further exploited by improving the limitations, increasing the usefulness of city rankings and indexes.

2.3 City benchmarking

Cities can compare themselves using city rankings and indexes. Consequently, city rankings and indexes facilitate the process of city benchmarking (Acuto et al., 2021). Thus, to understand how city rankings and indexes may impact the planning of healthy cities, it is also important to elaborate on city benchmarking. In this chapter, I discuss what is considered city benchmarking, highlight different attitudes toward benchmarking, and discuss the criticisms of city benchmarking. This review guides the study and explains how cities may react to city rankings and indexes.

2.3.1 Defining city benchmarking

Benchmarking is the practice of comparing (Acuto et al., 2021; Kitchin et al., 2015; Moriarty & Smallman, 2009; Sáez et al., 2020). Benchmarking is deeply ingrained in urban practices and can be identified as an institution: "[a] game to which players cannot help but subscribe" (Bok, 2021, p.382; Knutsson et al., 2012). Benchmarking requires two parties: one acting as a reference point with a desired state and the other seeking to inform itself on the practices needed to achieve the desired state (Francis & Holloway, 2007; Knutsson et al., 2012; Luque-Martínez & Muñoz-Leiva, 2005; Moriarty & Smallman, 2009). Therefore, benchmarking is not merely about copying practices and reaching the 'best' possible state but also about improving practices and making them 'better' (Moriarty & Smallman, 2009). A detailed definition of benchmarking is found in the literature on typologies of benchmarking. One of the most cited typologies, by Camp (1995), distinguishes between internal, competitive, functional, and generic benchmarking. In the urban context, benchmarking is referred to as urban or area-based benchmarking, and is based on performance, processes, or policies (Huggins, 2010). Urban benchmarking can be competitive, cooperative, or collaborative, meaning that the benchmarked entities differ in the extent of supporting (voluntary vs. involuntary) the benchmark and the extent to which the benchmarked are competitors (Knutsson et al., 2012; Luque-Martínez & Muñoz-Leiva, 2005; Meijering et al., 2014). Table 4 gives an overview of the various types of benchmarking. In short, benchmarking is comparing practices to enhance one's own practices. The various types of benchmarking show that intentions and support of benchmarking differ.

Table 4 Types of benchmarking

Type of benchmarking	Definition
Internal benchmarking	Comparison among similar operations within one's own organization (Francis & Holloway, 2007, p.174).
Competitive benchmarking	Comparison to the best of the direct competitors (Francis & Holloway, 2007, p.174).
Functional benchmarking	Comparison of methods to companies with similar processes in the same function outside one's industry (Francis & Holloway, 2007, p.174).
Generic benchmarking	Comparison of work processes to others who have innovative, exemplar work processes (Francis & Holloway, 2007, p.174).
Performance benchmarking	Comparison of the performance of urban areas against pre-set indicators (Huggins, 2010; Kitchin et al., 2015)
Process benchmarking	Comparison of the processes constituting the practices of urban areas (Huggins, 2010; Kitchin et al., 2015)
Policy benchmarking	Comparison of the public policies in place that affect an urban area's performance and processes (Huggins, 2010; Kitchin et al., 2015)
Competitive urban benchmarking	Comparison of urban areas regardless of whether these areas want to be included in a benchmark. The urban areas likely do not give away information for the benchmark due to competing with the other urban areas included (Kitchin et al., 2015; Luque-Martínez & Muñoz-Leiva, 2005).

Type of benchmarking	Definition
Co-operative urban benchmarking	Comparison of urban areas based on a cooperative effort. The urban areas cooperate with the initiators of the benchmark by providing information on their situation. The urban areas included in the benchmark are not likely to be direct competitors (Kitchin et al., 2015; Luque-Martínez & Muñoz-Leiva, 2005).
Collaborative urban benchmarking	Comparison of urban areas based on a collaborative effort. The urban areas work together on joint projects and have familiar experiences. The urban areas work together and share information to develop standardised indicators (Kitchin et al., 2015; Luque-Martínez & Muñoz-Leiva, 2005).

2.3.2 Attitudes toward benchmarking

As concluded above, the intention and support of benchmarking differs. Based on this thought, Knutsson et al. (2012) present a typology of different attitudes toward benchmarking in their study on municipal benchmarking networks. Knutsson et al. (2012) studied how benchmarking actions in municipal networks influenced municipalities' behaviour into changes in performance. Their typology enhances the understanding of cities' attitudes toward city rankings and indexes. Based on the identified variations in the effort to change behaviour and performance, Knutsson et al. (2012) identified four attitudes toward benchmarking:

1. **Denial.** Municipalities with a denial attitude have a low performance on the benchmark and low effort to change behaviour. Municipalities with this attitude question the benchmark norm, refrain from using its information, and tend to blame their performance on limitations of the benchmark.
2. **Improvers.** Municipalities with an improvers attitude have a low performance on the benchmark, but a high effort to change behaviour. Municipalities with this attitude embrace the benchmark and use its information to improve their practices.
3. **Complacency.** Municipalities with a complacency attitude have a high performance on the benchmark, but a low effort to change behaviour. Municipalities with this attitude use the benchmark as confirmation of their high performance.
4. **Levelling.** Municipalities with a levelling attitude have a high performance on the benchmark and a high effort to change behaviour. Municipalities with this attitude lower their ambitions to prevailing norms. These municipalities concern themselves with levelling rather than improving.

Figure 4 shows the different attitudes in a matrix.

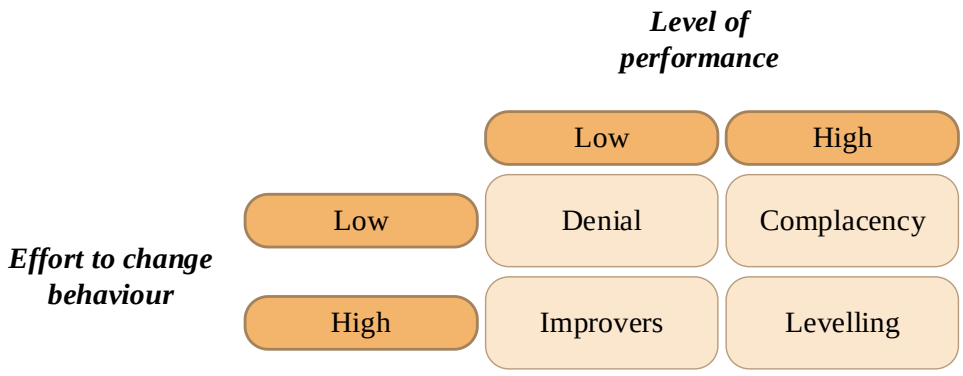


Figure 4 Attitudes toward benchmarking (based on Knutsson et al. (2012))

Kitchin et al. (2015) also highlight that municipalities' attitudes toward benchmarking differ. However, they distinguish between only two groups. Municipalities either use benchmarking information as evidence to manage the city or as contextual background knowledge. The first group recognises the city as a simple entity manageable through performance metrics. At the same time, the latter group acknowledges that a city is a complex interdependent system which is not reducible to performance metrics. While the typology of Knutson et al. (2012) is more detailed than the one of Kitchin et al. (2015), it makes evident that municipalities tend to have a different attitude toward benchmarks and/or city rankings and indexes based on their level of performance, the effort to change behaviour, and perceived use.

2.3.3 Criticism of city benchmarking

Related to the attitudes toward benchmarking, prior literature identified several criticisms of city benchmarking. Most of the criticisms of benchmarking relate to the limitations of city rankings and indexes. Focussing specifically on benchmarking in the urban context, the following extra criticisms come forward.

First, considering the costs, participating in a city benchmark might not be beneficial. Taking part in a benchmark initiative carries strategic risks: "it [city benchmarking] carries strategic risks, such as the inability to control effectively against loss of sensitive data to competitors or the costly failure to implement someone else's 'best practice' effectively" (Francis & Holloway, 2007, p.177). Additionally, there are hidden costs, such as securing employee time to cooperate with the initiators of the benchmark (Francis & Holloway, 2007; Moriarty & Smallman, 2009; Scott, 2011). Therefore, the cost-benefits of city benchmarks are often overlooked (Moriarty & Smallman, 2009).

Second, the competitive nature of city benchmarking is criticised. Scholars argue that there is tension between competition and collaboration in city benchmarking. Rather than becoming the best in the benchmark, benchmarking should be used to become better. Put differently, less inter-city competition and more inter-city collaboration. The same scholars argue that while benchmarking is mainly competitive, it has considerable potential to stimulate collaboration and engagement between cities (Francis & Holloway, 2007; Moriarty & Smallman, 2009).

Third, the retrospective nature of benchmarks is criticised. In a fast-moving globalised economy, the desirable state assessed may be disassociated from the needed future state: "by focusing on current processes and practices the need to prepare for a changing future and adapt to new conditions may not be fulfilled" (McManus, 2012; Moriarty & Smallman, 2009; Scott, 2011, p.4). Consequently, scholars argue that cities should be benchmarked against their own targets: "it would be more appropriate to judge them [cities] with respect to how they are performing against their own policies and targets, not benchmarked against each other" (White & Kitchin, 2021, p.386). This would, for instance, also include addressing the transformative capacities of cities.

Lastly, scholars critique that the initiators of benchmarking initiatives are under-examined. Studying the initiators of city benchmarks should enhance the understanding regarding how and to whose benefit the benchmarks are developed (Bok, 2021). Overall, while city benchmarks are seen as good practices, they deal with various criticisms, making the city benchmarks less attractive.

2.4 Planning of healthy cities using city rankings and indexes

As the literature shows, city rankings and indexes and benchmarking are composed of indicators, in other words, factual data. Therefore, city rankings and indexes can be considered evidence and serve as a foundation for evidence-based planning (Kitchin et al., 2015). The use of evidence in planning also explains how city rankings and indexes may impact the planning of healthy cities. In this section, I elaborate on the planning of healthy cities using city rankings and indexes by highlighting the use of evidence in planning.

Broadly speaking, evidence can be defined as facts and knowledge (Bowen & Zwi, 2005; Brown & Corry, 2011; Grant & Davis, 2019). There are several types of evidence, such as research, advice, politics, economics, media, and the Internet. City rankings and indexes are a type of evidence and serve as a foundation for evidence-based planning (Kitchin et al., 2015). This concerns both the practice of policymaking and shaping and designing the urban environment:

> Evidence is usually sought to show effectiveness ("it works"), show the need for policy action ("it solves a problem"), guide effective implementation ("it can be done"), and show cost effectiveness ("it is feasible and may even save money"). (Bowen & Zwi, 2005, p.0601)

The distinction between (1) evidence and policymaking and (2) evidence and the design of the urban environment can be explained as follows.

Policymaking. The use of evidence in policymaking stems from the New Public Management (NPM) movement in the public sector (Knutsson et al., 2012; White & Kitchin, 2021). The NPM movement is the practice of monitoring and auditing an organisation using performance tools and indicators, such as benchmarking (Erkkilä & Piironen, 2018; Sáez et al., 2020). There are different motivations for using evidence in policymaking. Most motivations are related to political reasons, such as legitimation, justification, and problem-framing (Bowen & Zwi, 2005; Erkkilä & Piironen, 2018).

Design of the urban environment. Policy changes can instigate modifications in the urban environment. Consequently, using evidence in designing the urban environment is the practice in which evidence is used to guide the design process (Lak & Aghamolaei, 2022). More specifically, related to the designers of the urban environment, landscape architects and urban planners, it can be defined as: "the deliberate and explicit use of scholarly evidence in making decisions about the use of shaping of land" (Brown & Corry, 2011, p.328). Although evidence-based design of the urban environment is not uncommon, most contemporary designs are still based on beliefs, intuition, and traditions, rather than facts (Brown & Corry, 2011, 2020; Lak & Aghamolaei, 2022; Stoltz & Grahn, 2021). However, it is argued that evidence-based design has great potential (Brown & Corry, 2020; Stoltz & Grahn, 2021). Stoltz & Grahn (2021) also argue that evidence might help to obtain a more sustainable environment.

2.5 Key points literature review

In this section, I summarise the key points of the literature review per section. Hereafter, I present a visualisation of the literature review. The visualisation shows how the sections and the discussed concepts relate.

Section 1: Healthy cities. Contemporary health issues result from how cities are designed and lived in. Therefore, there is an increasing call to plan healthy cities. However, there is no universal definition of a healthy city. A healthy city is a changing concept, continuously adapting to the fast-changing society. Therefore, the notion of a healthy city knows many conceptualisations; health is multi-faceted. In essence, a healthy city protects its residents from health risks and promotes a healthy lifestyle. Planning exerts a direct influence on health through the built environment. Therefore, urban planning plays a critical role in improving health. There are several attempts and initiatives to increase awareness regarding the impact of urban planning on planning healthy cities on a global, national, and local scale. Though, planning healthy cities is complicated as health is not a domain-specific topic. The planning of healthy cities is a shared responsibility. Considering the various challenges, achieving successful planning of healthy cities often requires fundamental changes in organisational structures.

Section 2: City rankings and indexes. City rankings and indexes exist for various topics. The private sector mainly initiates the development of city rankings and indexes. The development of city rankings and indexes generally follows a 5-step phase: (1) identifying the ranking attribute and indicators, (2) aggregating the indicators into a composite index, (3) selecting cities, (4) data collection for the selected cities, and (5) reporting on the results. City rankings and indexes serve as valuable tools for different disciplines. However, city rankings and indexes also have limitations. The limitations and potentials of city rankings indexes can be classified into two categories: (1) methodology and (2) practical use. The limitations mainly concern the first group, while the potentials primarily concern the second group. The most potential in improving city rankings and indexes lies in enhancing the methodology.

Section 3: City benchmarking. City rankings and indexes facilitate the process of city benchmarking. City benchmarking is the practice in which cities compare their performance to other cities'. Benchmarking in the urban context is called urban or area-based benchmarking and is based on performance, processes, or policies. The nature of city benchmarking may be competitive, cooperative, or collaborative. Generally, there are four attitudes toward benchmarking: denial, improvers, complacency, and levelling. The attitudes influence how municipalities use and look at benchmarking initiatives. Despite its potential usefulness, benchmarking is criticised for its competitive nature, tendency to overlook cost-benefits and under-examination of its initiators.

Section 4: Planning of healthy cities using city rankings. City rankings and indexes, and benchmarking, serve as a foundation for using evidence in planning. Evidence can be defined as facts and knowledge. Using evidence in planning concerns both policymaking and urban environment design. There are various motivations for using evidence in planning, mainly depending on political reasons. The use of evidence is said to have great potential. However, most decisions are still based on beliefs and traditions rather than facts. The use of evidence and data in planning explains how city rankings and indexes may impact the planning of healthy cities.

Figure 5 presents a visual summary of the literature review. It shows the relationships between the discussed topics of urban planning, indicators, and city rankings and indexes in the literature review.

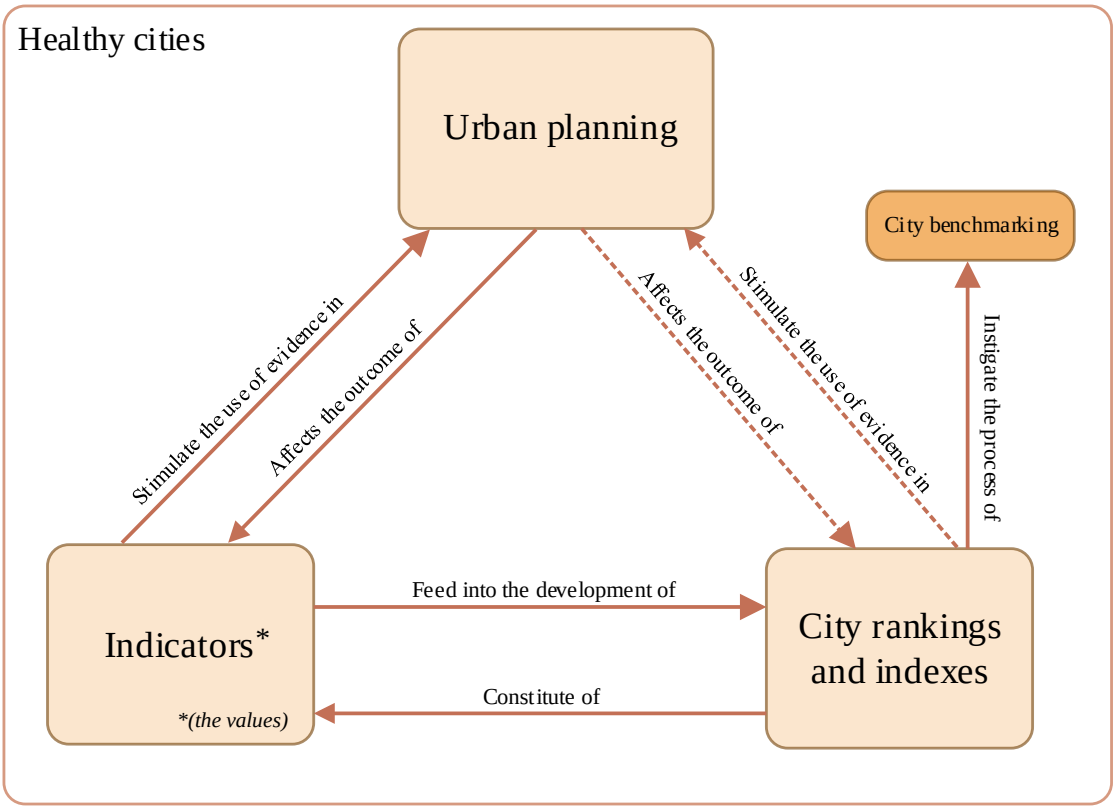


Figure 5 Visualisation of the summary of the literature review

Urban planning affects the outcome of city rankings and indexes through the changing indicator values that city rankings and indexes constitute of; the relationship between city rankings and indexes is indirect (dotted lines). Subsequently, city rankings and indexes stimulate the use of evidence in urban planning through their indicators' data. Put differently, city rankings and indexes serve as a foundation for using evidence in urban planning. Consequently, how the urban environment is planned affects the outcome of the indicator values and, thus, the outcomes and results of city rankings and indexes. While city rankings and indexes affect urban planning, city rankings and indexes may also affect the planning of the urban environment. Moreover, city benchmarking is included in the figure as city rankings and indexes instigate the process of city benchmarking.

2.6 Conceptual framework

The conceptual framework was formed based on the literature review (Figure 6). This study aims to understand the impact of city rankings and indexes on planning healthy cities. The impact of city rankings and indexes on the planning of healthy cities is conceptualised through the following factors: (1) the attitude toward city rankings and indexes, (2) the importance of the ranking attribute within an organisation, (3) the ranking / performance on a city ranking or index, and (4) the perceived limitations and potentials of city rankings and indexes. The conceptual framework helps to identify the underlying factors that influence how city rankings and indexes impact the planning of healthy cities. This conceptual framework guided the remaining parts of this study.

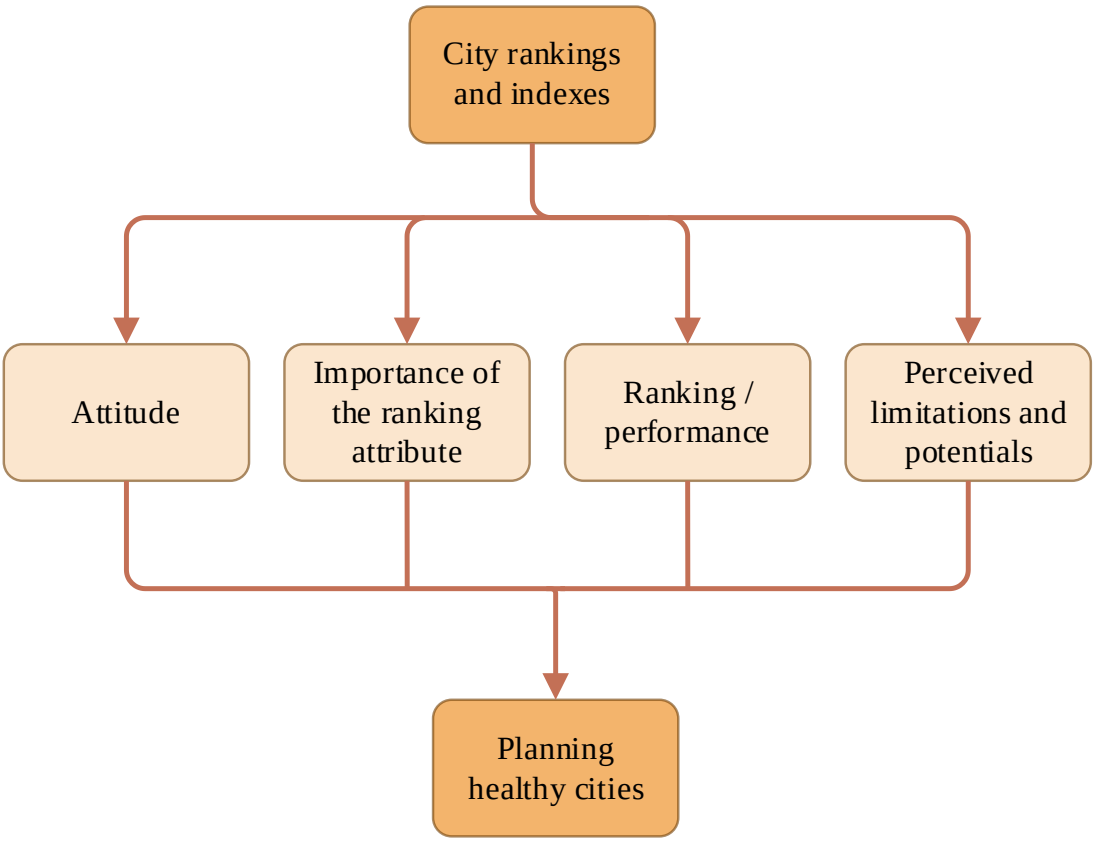
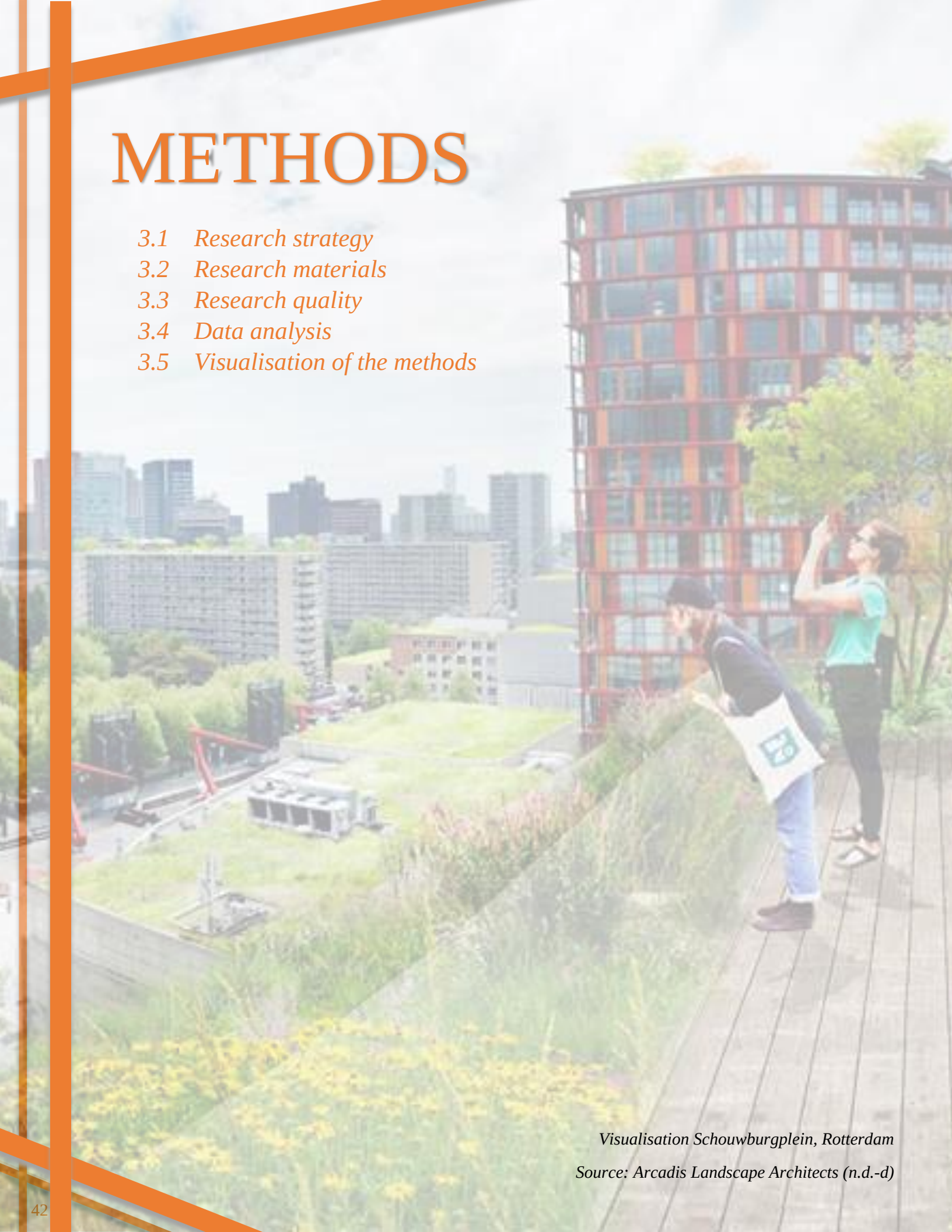


Figure 6 Conceptual framework

METHODS



Visualisation Schouwburgplein, Rotterdam

Source: Arcadis Landscape Architects (n.d.-d)

3 Methods

In this section, I present the methods used for conducting the research. I detail the research strategy, research materials, and data analysis. I also elaborate on the research quality. As indicated, I chose to demarcate to a Dutch context, using the Healthy City Index (HCI) by Arcadis as a case (Boon et al., 2022).

3.1 Research strategy

The main question of this research is: '*How do city rankings and indexes impact the planning of healthy cities'*. I used the following set of sub-questions as a framework to answer the main question. For each sub-question, I shortly explain its contribution to the main question.

Sub question 1: *'What are the perceived potentials and limitations of using city rankings and indexes as a reference for planning healthy cities?'*

> ***Explanation:*** This sub-question sheds light on city rankings and indexes' positive and negative influences on planning healthy cities. It provides insight into why city rankings and indexes are or could be used (or not) for planning healthy cities.

Sub question 2: *'What is the role of indicators in planning healthy cities and how do they influence (healthy) transformations of the urban environment?'*

> ***Explanation:*** City rankings and indexes are composed of several indicators. By assessing how indicators influence the planning of healthy cities, consequently, transformations of the urban environment, this question sheds light on the potential usefulness of city rankings and indexes in driving transformations of the urban environment (toward health cities). As the HCI was only recently published, this sub-question aims at assessing the alignment to indicators in the planning process rather than assessing specific outcomes or implementations due to policy changes based on indicators. The following section details this more.

Sub question 3: '*How can city rankings and indexes be improved to serve as strategic steering tools for planning healthy cities?'*

> **Explanation:** This question sheds light on the potentialities of future and limitations of current city rankings and indexes by analysing how city rankings and indexes could be improved to serve as strategic steering tools for planning healthy cities. Consequently, this question has a forward-looking character.

To answer the research questions, I adopted qualitative research methods. Specifically, a case study approach involving semi-structured interviews. The following paragraphs explain the main reasons for this.

The main reason for choosing a case study approach is as follows. As academic literature using empirical analysis to assess the impact of city rankings and indexes on planning is limited, using a case study approach in this study is a good starting point. Using a case study, I gain an in-depth and empirical understanding of the research topic in a specific context (Bryman, 2012; Verhoeven, 2019). The case in question is the HCI, explained more in the following section.

The main reason for choosing semi-structured interviews is the following. This study aims to understand the impact of city rankings and indexes on planning healthy cities and, consequently, transformations of the urban environment. Consequently, the study focuses on the perceptions toward using city rankings and indexes in urban planning. Qualitative interviews fit research focusing on perceptions, underlying arguments, and motives best (Bryman, 2012; Choy, 2014; Verhoeven, 2019). Hence the choice to use semi-structured interviews. Also, the use of semi-structured interviews entails a certain kind of flexibility and provides both the researcher and the interviewee leeway (Bryman, 2012). There is more opportunity to ask

open-ended questions and respond to interviewees' answers. Therefore, semi-structured interviews allow an understanding of the background of interviewees' choices and answers. This helps to put the answers of interviewees into context. Additionally, as most questions are not predefined, the most important matters to the interviewees can still be raised and explored (Bryman, 2012; Choy, 2014). Moreover, considering the limited available knowledge on the impact of city rankings and indexes, semi-structured interviews offer the opportunity to do a more exploratory study instead of producing generalisable results (Bryman, 2012; Verhoeven, 2019). Overall, semi-structured interviews were considered the best fit for answering the research questions.

3.2 Research materials

In this section, I discuss the research materials. As this study uses a case study approach, I first highlight the used case. After that, I discuss the expert interviews.

3.2.1 Case context

For this study, I limited myself to a specific city ranking and index as a case study. Consequently, I demarcated to a Dutch context and assessed the HCI by Arcadis (Boon et al., 2022). I chose the HCI for two reasons. The first reason can be attributed to the fact that there is no universal definition of cities. Countries use different criteria to define what a city is (UN-Habitat, 2020; White & Kitchin, 2021). This makes an analysis of an international city ranking or index, including different country-specific definitions, complex. Additionally, some countries do legally not make use of a city definition. In the Netherlands, for example, there is no legal distinction between villages, towns, and cities. Since the implementation of the 'Gemeentewet' (English: Municipality law) in 1851, there is instead talked of municipalities (Karel, 2013; Staats Evers, 1891). As I wanted to ensure that the city ranking or index used for the case study included only one type of definition for a specific country, I chose to demarcate to a Dutch context, to which the HCI applies. Second, the HCI was recently published, in November 2022, for the second time (the first edition was published in 2020), which was at the time this study started. Additionally, the HCI received wide attention in the media (Keijzer, 2022; Langejan, 2022; NOS, 2022; Rosman, 2022). Altogether, this made the HCI an interesting case for this study.

3.2.2 Expert interviews

To analyse the impact of the HCI, semi-structured interviews were used. In this section, I elaborate on the experts that were approached, the methods used to approach the experts and the topics for the interviews.

Experts. For the semi-structured interviews, different kinds of experts were approached. The experts included: municipal experts employed in the municipalities included in the HCI, an expert from Arcadis (the initiator of the HCI) and an expert on the topic of healthy cities. The municipal experts were employed in the municipalities included in the HCI. In total, the HCI assessed 25 municipalities. The 25 municipalities consist of the twelve largest municipalities of each of the provinces in the Netherlands, completed with the thirteen largest municipalities in the whole of the Netherlands, measured by population on the 1st of January 2022. The 25 municipalities are the following: Almere, Amersfoort, Amsterdam, Apeldoorn, Arnhem, Breda, Den Bosch, Den Haag, Eindhoven, Emmen, Enschede, Groningen, Haarlem, Haarlemmermeer, Leeuwarden, Leiden, Maastricht, Nijmegen, Rotterdam, Terneuzen, Tilburg, Utrecht, Zaanstad, Zoetermeer, and Zwolle (Boon et al., 2022). It is important to note that the HCI ranked each municipality in different domains and overall. For this study, I took the overall ranking of the HCI as a reference to contact municipal experts. Figure 7 shows the overall ranking of the municipalities. I divided the municipalities into four categories: top, middle, bottom, and extra municipalities. The re-assessed municipalities were divided into three near-to-equal groups complemented with the group of new entries. I contacted the municipal experts using this division. Of each group, at least two municipal experts were contacted and interviewed.

Figure 7 The HCI ranking (based on Boon et al. (2022))

The municipal experts were approached based on the following two criteria. Firstly, the municipal experts had to be employed in a municipality ranked in the HCI. Secondly, municipal experts had to be involved in (healthy) urban planning or related topics, such as planning in general or area development, focusing on healthy urban transformations. The municipalities were chosen randomly. The interviews with the municipal experts were based on the availability of municipal experts employed in the municipalities. The municipal experts interviewed also included politicians such as alderman.

By interviewing a wide range of municipal experts from municipalities with varying rankings in the HCI, the interviews gave a broad overview. To receive extra and in-depth context on healthy cities and the HCI, an expert from Arcadis (the initiator of the HCI) and a healthy cities expert were also approached. In total, 24 experts were interviewed, of which 22 were employed in a municipality included in the HCI. Three municipal experts were employed in a municipality at the top, six municipal experts were employed in a municipality in the middle, nine municipal experts were employed in a municipality at the bottom, four municipal experts were employed in municipalities that were new entries, one expert was from Arcadis and the initiator of the HCI, and one expert was had profound knowledge on the topic of healthy cities. Figure 8 shows the spatial distribution of the experts. Table 5 presents the details about the interviewed experts.

Figure 8 Spatial distribution of the experts (based on Boon et al. (2022))

Methods to approach the experts. The experts were approached using several methods. Firstly, via a contact list provided by my internship supervisor. Secondly, by emailing the corporate director or alderman of the municipalities. The experts were sent direct emails and/or telephoned. Also, using snowball sampling, I got in contact with other potential experts. The experts were sent a personalised invite to let them feel concerned and of significant value to the study.

Topics of the interviews. The interviews were semi-structured, meaning that I used a topic list including a combination of open-ended and close-ended questions allowing room to further elaborate on the answers given to the questions (Bryman, 2012). The main topics of the interviews were, broadly speaking, structured according to the sections in the literature review and concepts in the conceptual framework to maintain the structure for analysis. I used three slightly different topic lists, which were based on the role of the expert. The topic lists were given an identification letter: H for healthy cities expert, I for initiator, and M for municipal expert. The topic lists can be found in Appendix A: Topic list H, Appendix B: Topic list I, and Appendix C: Topic list M. All interviews were conducted in Dutch. The topic lists are, therefore, also only available in Dutch.

Table 5 Experts interviewed

Experts and details									
N.	**Organisation / Municipality**	**Group** ***(top, middle, bottom, extra)***	**Occupation**	**Source of contact**	**Contact mode**	**Interview details**			**Topic list** ***(H, M, or I)***
						Location	**Date** ***(MM-DD -2023)***	**Duration** ***(+/-)***	
1	GO! Visie	N.A.	Senior advisor Gezonde Omgeving GO!	Recommendation by internship supervisor	Email	Online (MS Teams)	03/07	60 min.	H
2	Leeuwarden	Middle	Senior advisor urban planning	Contact list from internship supervisor	Email	Online (MS Teams)	04/14	60 min.	M
3	Groningen	Top	Concern advisor strategy / healthy city and region	Recommendation by internship supervisor	Email	Online (MS Teams)	04/21	60 min.	M
4	Nijmegen	Top	Senior policy advisor public health	Contact list from internship supervisor	Email	Online (MS Teams)	04/25	30 min.	M
5	Amersfoort	Top	Advisor landscape and leisure	Contact list from internship supervisor	Email	Online (MS Teams)	04/26	60 min.	M
6	Arnhem	Middle	Project manager environment and planning act* Strategist environment	Via a contact on the contact list from internship supervisor	Email	Online (MS Teams)	04/26	40 min.	M
7	Utrecht	Middle	Senior advisor healthy living environment	Contact list from internship supervisor	Email	Online (MS Teams)	05/01	45 min.	M
8	Terneuzen	Bottom	Senior policy advisor environment and economy (urban planner)	Via the corporate director of the municipality	Email	Online (MS Teams)	05/02	40 min.	M
9	Breda	Middle	Senior urban planner	Via a board advisor of the municipality	Email	Online (MS Teams)	05/02	40 min.	M
10	Haarlem	Middle	Spatial strategist	Via the corporate director and a senior urban planner of the municipality	Email	Telephone	05/03	30 min.	M
11	Arcadis Nederland B.V.	N.A.	Head advisory group landscape architecture and urbanism (initiator of the HCI)	Internship company	Face-to-face	At the Arcadis office in Amersfoort	05/08	50 min.	I

12	Zaanstad	Bottom	Alderman	Email via the website of the municipality	Telephone and email	Online (MS Teams)	05/10	30 min.	M
13	Tilburg	Bottom	Advisor healthy living environment	Via the corporate director of the municipality	Email	Online (MS Teams)	05/10	45 min.	M
14	Terneuzen	Bottom	Alderman	Email from the website of the municipality	Email	Online (MS Teams)	05/12	30 min.	M
15	Leiden	Extra	Policy advisor for health policy	Via the corporate director of the municipality	Email	Online (MS Teams)	05/16	35 min.	M
16	Zwolle	Extra	Facility manager (Dutch: Beheermanager) green	(Presumably) via the corporate director of the municipality	Telephone and email	Online (MS Teams)	05/16	40 min.	M
17	Zaanstad	Bottom	Strategy advisor social domain Researcher	Via a contact on the contact list from internship supervisor	Email	Online (MS Teams)	05/19	55 min.	M
18	Zwolle	Extra	Coordinator active mobility and urban ergonomist	Via the expert from Leeuwarden	Email	Online (MS Teams)	05/23	35 min.	M
19	Den Haag	Bottom	Concern advisor strategy Senior strategic advisor public space Senior policy advisor public space	Via the corporate director of the municipality	Email	Online (MS Teams)	05/24	50 min.	M
20	Leiden	Extra	Department manager sustainable living environment	Via the corporate director of the municipality	Telephone and email	Online (MS Teams)	05/24	35 min.	M

**Former employee of the municipality of Arnhem*

3.3 Research quality

For each research, it is important to elaborate on the research quality. In this section, I discuss the research validity and reliability. Additionally, I highlight the ethical considerations.

Validity. Validity concerns the integrity of the research. There are different types of validity, such as internal validity, external validity, and measurement validity. For this study, internal validity and measurement validity are the most relevant. Internal validity concerns whether accurate and correct conclusions are drawn from the results (Bryman, 2012; Verhoeven, 2019). To enhance the internal validity, a wide variety of municipal experts were interviewed, reducing biases toward the HCI based on municipal experts' municipalities' ranking on the HCI. Moreover, the same topic list was used for each category of experts to ensure consistency of research instruments throughout the study. Measurement validity, also called construct validity, concerns whether what was intended to be measured, was measured (Bryman, 2012; Verhoeven, 2019). To enhance measurement validity, experts' responses were re-iterated or summarised during the interviews. Regarding the external validity, the generalisability of this study's results is limited due to the context-specificness of the case. Even though the results might not be directly extrapolated to other contexts, the findings might still be usable in other contexts.

Reliability. Reliability concerns the replicability of the research (Bryman, 2012; Verhoeven, 2019). To enhance the replicability of the research, the research analysis, and research choices made are documented elaborately. Moreover, the topic lists used during the interviews can be found in the appendix (Appendix A: Topic list H, Appendix B: Topic list I, and Appendix C: Topic list M). The topic lists were tested and peer reviewed. Though, using these topic lists might yield different results due to the time- and context-specificness of the current study. The opinion of municipal experts toward the HCI might be subject to change over time. Nonetheless, the documentation of the choices made still enhances the research reliability.

Ethical considerations. Given the use of interviews, several ethical issues had to be anticipated. I clearly and transparently communicated with the experts. Their participation was voluntary, and they could withdraw at any given time. An information letter (Appendix D: Information letter interviews) and an informed consent form (Appendix E: Informed consent form interviews) were drawn up. As all interviews were conducted in Dutch, the information letter and informed consent form are only available in Dutch. Experts were sent the information letter and informed consent form and/or were asked if the interview could be recorded, and the results used in the study at the start of the interview. Although only a few experts filled in the informed consent form, each expert was asked for and gave permission, either written or verbal. Furthermore, the privacy of the experts was respected. Only the role of the expert in the organisation/ municipality was used in the study unless discussed otherwise. Information obtained from the interviews was dealt with confidentially. All interview data were stored in password-protected folders made available by the Utrecht University. A concise interview summary was sent to the experts after the interview. Depending on the experts' preference, they were also sent the complete transcription of the interview, the study, and/or the summary upon completion of the current study. This way, it also became apparent that the input of the experts was used. The transcriptions of the interviews (Appendix F: Transcriptions of the interviews) are confidential and were only made available to the Utrecht University thesis supervisors in a separate file.

3.4 Data analysis

The collected data were manually analysed using the steps shown in Figure 9. At first, the interviews were transcribed. Then, a list of topics for interview analysis was made. The topics were derived from the topics outlined in the literature review, and some topics emerged inductively through a preliminary examination of the transcriptions. Next, relevant quotes for each topic were extracted from the interviews and organised accordingly. It is important to note that some quotes were relevant to multiple topics and used multiple times during the analysis. After extracting and organising the quotes, the topics were summarised based on the corresponding quotes. This process was repeated for all twenty interviews. There was a constant reflection on which quotes corresponded to which topics. After the completion of the analysis, the results section was written. Writing the results, it was chosen to name experts only when using their quotes. Most quotes used are examples of a shared opinion among the interviewed experts. Other results were not linked to specific experts to ensure anonymity. It is essential to mention that a municipal expert's perspective does not represent the general perspective of their municipality; within municipalities, perspectives may differ. Moreover, as Arcadis, the private company which published the HCI, also received a copy of this study, it is critical to avoid potential disputes between the municipalities from which experts were interviewed and Arcadis to ensure that both still have equal market opportunities. Consequently, to avoid potential harm due to sensitive opinions and to respect the research principle of doing no harm to your participants, it was chosen to omit references to experts except for the quotes. The transcriptions of the interviews were made available to the assessors of this study, so the accuracy of statements could be checked. During the interviews, some municipal experts indicated to be unfamiliar with the HCI. In these interviews, the discussions focused on the broader topic of city rankings and indexes. Therefore, the data collected contains a combination of specific and general perspectives on city rankings and indexes.

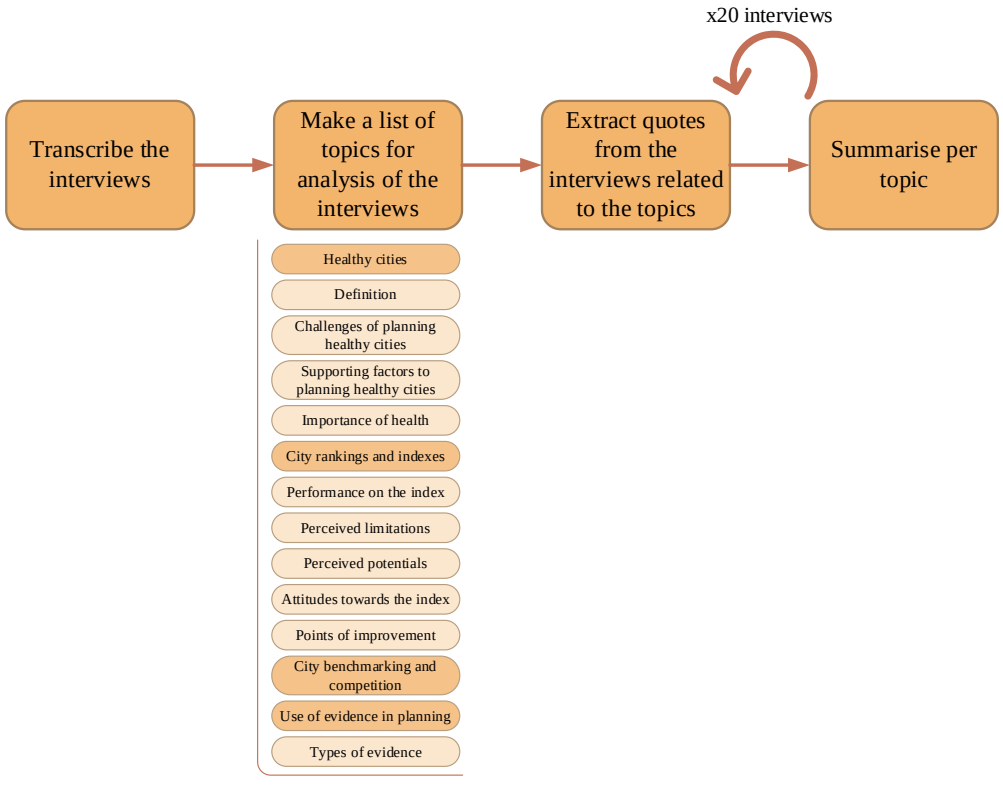


Figure 9 Data analysis steps

3.5 Visualisation of the methods

The methods are visually displayed below in Figure 10.

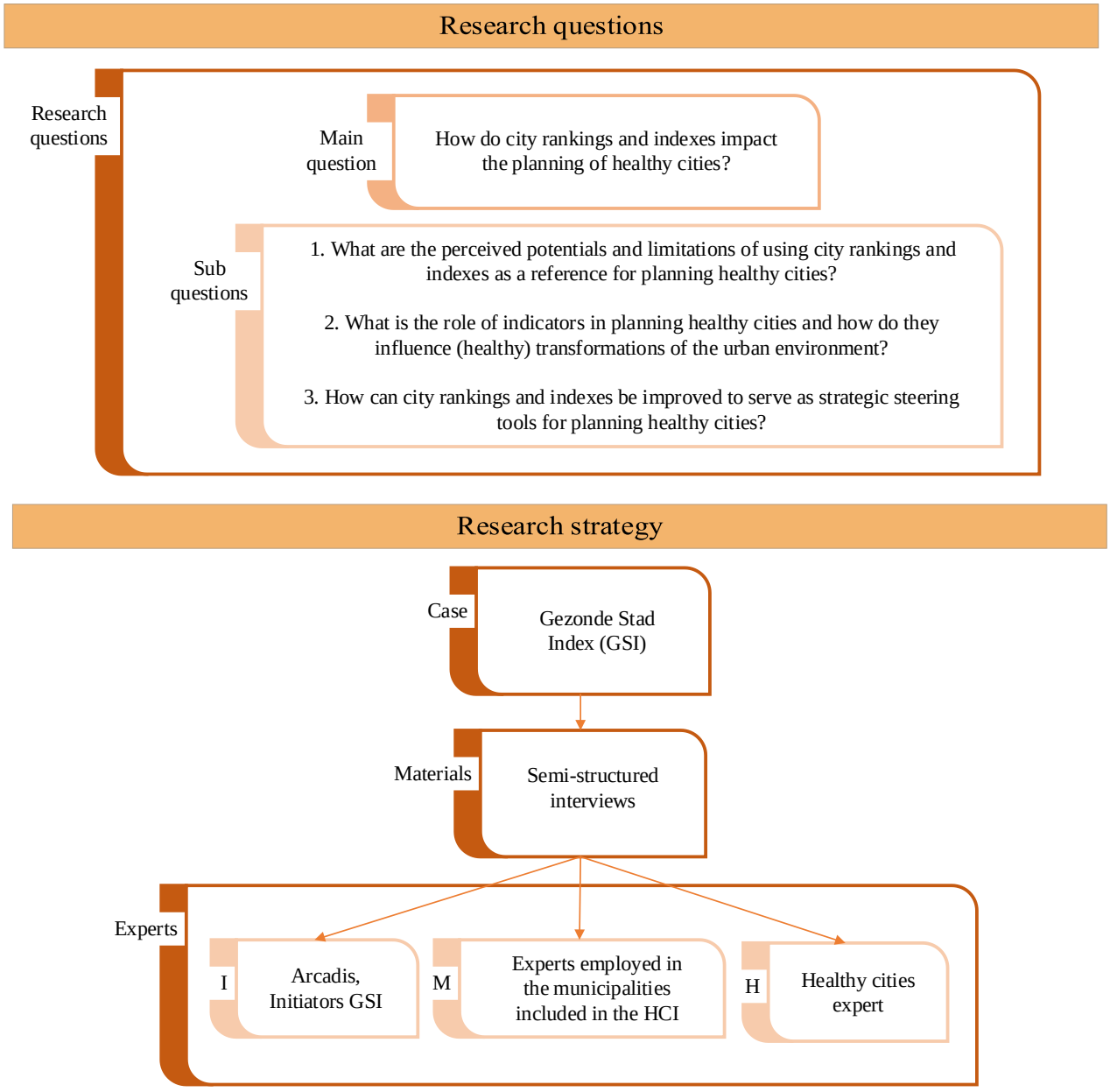


Figure 10 Visualisation of the methods

RESULTS

Zuidpolder, Barendrecht

Source: Arcadis Landscape Architects (n.d.-e)

4 Results

In this chapter, I discuss the results. In total, 24 experts were interviewed, of which 22 were employed in a municipality included in the Healthy City Index (HCI). Three experts were employed in a municipality at the top, six experts were employed in a municipality in the middle, nine experts were employed in a municipality at the bottom, four experts were employed in municipalities that were new entries, one expert was from Arcadis and the initiator of the HCI, and one expert had profound knowledge on the topic of healthy cities (see Methods). In this chapter, I first elaborate on the HCI. After that, per analysed topic, the results are presented.

4.1 The Healthy City Index

In this section, I detail on the HCI, based on an analysis of the report of the HCI (Boon et al., 2022), complemented with the results from the interview with the expert from Arcadis, the initiator of the index. I discuss the definition of a healthy city according to the HCI, the assessed characteristics and municipalities, the purpose of the HCI, and the intended use of the HCI by municipalities.

4.1.1 Introduction into the index

The HCI is an index developed by the consulting and engineering firm Arcadis. Arcadis was approached by an employee of the Dutch National Institute for Health and Environment (RIVM) concerning why (urban) designers applied little of the scientific knowledge available on planning healthy cities. This question led to the initiative to benchmark cities based on the topic of planning healthy cities. The index was published in November 2022 for the second time; the first edition was published in 2020. This study focuses on the second edition of the index. While the first edition assessed twenty municipalities, the second edition assessed five additional municipalities, bringing the total to 25 assessed municipalities in the second edition (Boon et al., 2022). The expert from Arcadis, the initiator of the HCI, indicated that the index serves the following three purposes:

1. **Highlight and identify pioneering municipalities.** The index aims to provide insight into which municipalities are pioneering the field of planning healthy cities, consequently, can be used as a source of inspiration for other municipalities. Therefore, the index aims to enforce inter-municipality learning.
2. **Identify what municipalities could improve.** The index aims to provide insight into the areas which municipalities could enhance by highlighting their strengths and weaknesses according to the assessed characteristics of a healthy city.
3. **Establish thought leadership.** The index aims to position Arcadis as a thought leader in the field of planning healthy cities; when people think about healthy cities, they should think of Arcadis. This purpose is, to some degree, a market strategy. Arcadis is a private company competing for clients, and the index ensures market presence through a unique selling point.

In the following sections, I provide an in-depth discussion of the assessed characteristics, method of ranking, assessed municipalities, and intended use of the index.

4.1.2 Assessed characteristics and method of ranking

As previously discussed, the HCI assessed municipalities based on the topic of planning healthy cities. To gain an understanding of the assessed characteristics, it is essential to discuss the HCI's definition of a healthy city. The HCI's definition of a healthy city aligns with the definition of a healthy city by the World Health Organisation (WHO). Subsequently, the characteristics assessed by the HCI were derived from research conducted by the RIVM in 2016 on the determinants of health (Boon et al., 2022). The reason for

using the WHO definition and the RIVM characteristics was explained by the expert from Arcadis, the initiator of the index, as follows:

> We actually used the WHO definition … a healthy city is something that is constantly evolving … it is not a status quo … the cities that are already doing very well can always do even better. Also, because, of course, new knowledge is constantly emerging in that field. … and what appealed to me about the characteristics collected by the RIVM was that they had done this with a very broad group of professionals, who had actually come to a kind of consensus of, well, these are the components that matter … and within [the] physical [environment] they had also clearly indicated what the most important ones were, so I actually thought that was a very good approach. (Expert 11)

To further understand the assessed characteristics by the HCI, it is crucial to elaborate on the RIVM research. The research conducted by the RIVM consisted of several phases (RIVM, 2018a, 2022):

1. **Completing a sentence.** First, 250 professionals were asked to complete the sentence 'For me, a healthy city is …' (Dutch: 'Een gezonde stad is voor mij'). Their answers produced a list of 350 characteristics of a healthy city.
2. **Merging the characteristics.** Next, the 350 characteristics were merged. Similar characteristics were grouped, which left a list of 88 characteristics.
3. **Assigning values to the characteristics.** After that, professionals were asked to assign a value to the remaining 88 characteristics based on how relevant the characteristic was for a healthy city. Based on this, a list of the twelve most important characteristics was created.
4. **Clustering the characteristics (sub-clusters).** The professionals were also asked to cluster the 88 characteristics into groups. A computer program (Conceptssystems Global Max) calculated how often characteristics were clustered into the same group. Based on this calculation, twelve clusters were produced. Each cluster includes between four to nine characteristics.
5. **Clustering the clusters (main clusters).** After clustering the characteristics, the clusters themselves were clustered into four main clusters.
6. **Conceptual map.** Once the clustering process was finished, the RIVM produced a digital, conceptual map that makes the cluster's characteristics visible.

Box 2 shows the twelve most important characteristics. Table 6 shows the main and sub-clusters.

Box 2 The twelve most important characteristics of a healthy city (based on RIVM (2018a, 2018b, 2022))

The twelve most important characteristics of a healthy city

A healthy city is a city where/which:

1. children can play outside;
2. you can easily move around by bicycle;
3. has good air quality;
4. you can easily move around on foot;
5. people feel safe;
6. has greenery to play in;
7. has safe bicycle routes;
8. that entices you to exercise;
9. is a safe city;
10. approaches health from different sectors;
11. sufficient and good quality sports and exercise facilities;
12. people in a vulnerable situation receive sufficient support.

Table 6 Clusters of the characteristics in the RIVM research (based on RIVM (2018a, 2022))

Main clusters	Sub-clusters
Social	Social networks
	Age-friendly city
	A caring city
	Care and income
Culture	Inspirational city
Urban environment	Bike-friendly
	Healthy and safe
	Sustainability and climate
	Healthy buildings
	Frayed (Dutch: Rafelig)
Policy	Integrated health policy
	Future-oriented and sustainable

The HCI specifically adopted the characteristics clustered in the main cluster 'urban environment' of the RIVM research. As was pointed out by the expert from Arcadis, the initiator of the index, the focus on the urban environment is due to Arcadis' expertise in the urban environment, consequently, the physical domain. Also, the focus on the physical domain, compared to the social domain, allowed for municipalities to be compared more easily. Through the focus on the urban environment, the index highlights the importance of a good foundation for health:

> If you do not pay attention, a lot of money in municipalities is actually put into mopping up instead of turning off the tap [municipalities address the aftermath rather than the underlying issue]. So, you actually have to start with the physical environment, I think, to see how you can get or keep people as healthy as possible, and then you have to help people who are in trouble. But now …[municipalities] have to do a lot about the cure instead of care. (Expert 11)

In more detail, the HCI only assessed the characteristics with a value of 3.00 or higher in phase three of the research conducted by the RIVM. Moreover, the characteristic 'a city that is spacious' was added to account for the urban structure and design of the city (Boon et al., 2022). The characteristics used were divided among five domains (the sub-clusters of the RIVM research were not used, new sub-clusters called 'domains' were developed). The main reason to differentiate between domains was to prevent the overshadowing of characteristics so that the index would not be determined by only a few characteristics. The differentiation between domains also points out that health is an integral topic, and a broad awareness of the issue is needed. Table 7 shows the characteristics assessed and domains used.

Table 7 Domains and characteristics of the HCI (based on Boon et al. (2022))

Domain		Characteristics
	Healthy built environment	A city that is spacious
		A hygienic city (or a clean city)
		With facilities, accessible to and usable by everyone
		A city with healthcare facilities accessible to all residents
	Healthy mobility	A city where you can easily move around by bicycle
		A city where you can easily move around on foot
		A city with good public transport
		A city with safe bicycle routes

Domain		Characteristics
	Healthy outdoor space	A city with greenery to play in (availability of green)
		A city where children can play outdoors
		A city that consciously creates quiet, sheltered places (noise, greenery, and wind)
		A city with greenery to look at
	Healthy environment	A city with good air quality (particulate matter PM10)
		A city with good air quality (nitrogen NO2)
		A city with little noise pollution
		A city focused on minimising heat stress
	Healthy community	A city where people feel safe/ a safe city
		A city that offers opportunities to recover from stress (undisturbed rest, recreation)
		A city that entices people to exercise / a city with sufficient and high-quality sports and exercise facilities
		A city with meeting places in public space

The characteristics assessed by the HCI include eleven of the most important characteristics of a healthy city from the RIVM research. In further detail, each characteristic is measured using a particular data unit. For example, the characteristic 'a city that entices people to exercise' was measured by the distance to sports facilities and the national exercise guideline (Dutch: Beweegrichtlijn) (Boon et al., 2022). More generally, the data used was sourced by reputable organisations, such as the Statistics Netherlands (Dutch: Centraal Bureau voor de Statistiek (CBS)) and the knowledge platform CROW. In some cases, GIS analyses (Geographical Information System) were performed by Arcadis itself. However, any random person performing the same GIS analyses should produce the same result. So, in general, the data used come from GIS analyses or can be obtained from public sources. Therefore, the data collected was obtained similarly for each municipality assessed. The data units are a mix of quantitative and qualitative data. An overview of the used data units can be found in Appendix G: Data units of the Healthy City Index (Table 10).

Using these data units, the municipalities were ranked for each domain and in an overall ranking. The twenty municipalities assessed in 2020 were used to form a benchmark to determine the ranking. The methodology used for the ranking is explained as follows in the report of the HCI:

> We chose to use the same 20 cities as a 'benchmark'. For each characteristic, the average of these 20 cities was determined. We then determined per city and per characteristic how they scored percentagewise compared to this average … 1% was determined by dividing the average of a characteristic by 50. If a city scored significantly better than the average for a certain characteristic, it could therefore score more than 100% for that characteristic. Thereby, the healthier the higher the percentage. .... Per domain, the percentage scores are added up. Based on this, a ranking from 1 to 20 was determined for each domain. To determine the overall ranking, the rankings per domain were then added up. The lower this addition; the higher a city ends up in the overall ranking. (Boon et al., 2022, p.48)

Again, it is crucial to mention that the HCI ranked the municipalities per domain and overall. This study solely looked at the overall ranking of the municipalities.

4.1.3 Assessed municipalities

The HCI assessed 25 municipalities. The 25 municipalities consisted of the twelve largest municipalities from each province in the Netherlands, supplemented by the thirteen largest municipalities in the whole of the Netherlands, measured by population on the 1st of January 2022. These municipalities are the following: Almere, Amersfoort, Amsterdam, Apeldoorn, Arnhem, Breda, Den Bosch, Den Haag, Eindhoven, Emmen, Enschede, Groningen, Haarlem, Haarlemmermeer, Leeuwarden, Leiden, Maastricht, Nijmegen, Rotterdam, Terneuzen, Tilburg, Utrecht, Zaanstad, Zoetermeer, and Zwolle. The municipalities were spatially dispersed across the Netherlands to provide a broad overview of different parts of the Netherlands (Boon et al., 2022). Figure 8 in the Methods chapter shows the spatial distribution of the assessed municipalities. Figure 7 in the Methods chapter displays the overall ranking. The rankings per domain can be found in the report of the HCI by Boon et al. (2022).

The expert from Arcadis, the initiator of the index, indicated that the index is not internationally focused due to the lack of internationally comparable data obtained equivalently. Additionally, an international index requires extensive research, for which costs is a crucial factor to consider. However, the expert from Arcadis, the initiator of the index, did indicate that other municipalities could also be assessed as part of a paid agreement. As for now, the index is expected to focus on the current 25 municipalities. However, in the next edition of the index, a more detailed assessment, neighbourhood level, of a municipality will potentially be included, as Arcadis is aware of the demand for a more detailed approach to assessing municipalities.

4.1.4 Intended use of the index

During the interview with the expert from Arcadis, the initiator of the index, the following points came forward regarding the use of the index by municipalities. Firstly, Arcadis hopes to raise awareness about the impact of the urban environment on health. They strive to use the knowledge of the index in all their projects, distinguishing themselves in the market. Furthermore, they hope that municipalities are continuously improving their urban environment, and the index supports municipalities in this process. The index helps by highlighting which areas could be enhanced by municipalities according to the assessed characteristics for planning a healthy city. Arcadis also hopes municipalities use the index to learn from each other's successes, consequently, initiating contact between municipalities. It was also expressed that it would benefit Arcadis if they were somehow involved in the process, considering that Arcadis is a private company. These points strongly align to the main purposes of the index. On another note, the expert from Arcadis, the initiator of the index, also noted that the index could contribute to a more data-driven and evidence-based way of designing the urban environment.

To sum up, the HCI's definition of a healthy city aligns with the definition of the WHO. The characteristics assessed are based on the RIVM research. The HCI assessed a number of characteristics ranging across five domains for 25 municipalities, which are spatially dispersed across the Netherlands. The five domains point out the broadness of the topic and were made to ensure that characteristics do not overshadow one another. The purposes of the HCI range from providing insight to being a marketing strategy. Ultimately, municipalities use the index to enhance areas that need to be improved and learn from each other's successes. Arcadis, being a private company, largely depends on costs regarding possible improvements and changes made to the index in the upcoming years.

4.2 Healthy cities

In this section, I detail the meaning of a healthy city according to municipal experts, expert from Arcadis and the healthy cities expert (hereinafter referred to as experts unless used otherwise). In this discussion, I highlight the identified key problems that complicate the planning of healthy cities and the factors that help address these problems. After that, I discuss the increased importance of the concept of a healthy city and highlight the municipal experts' perceptions of their municipalities' performance on the HCI.

4.2.1 The meaning and challenges of planning a healthy city

The experts perceived a healthy city as a two-sided concept. On the one hand, planners concern themselves with the design of the urban environment. On the other hand, social workers concern themselves with the social dimension of health (for example, employees of public health services). Consequently, the experts acknowledged that health is influenced by numerous factors, including both social and environmental factors. Accordingly, it was indicated that a healthy city should simultaneously reduce health risks (profoundly environmental factors) while also promoting healthy behaviours (profoundly social factors). On top of this, it was mentioned that a focus on health in planning cities has the potential to address other contemporary urban problems. An example, as illustrated by the expert from Arcadis, was as follows. The availability of green spaces not only benefits health, but also contributes to addressing desiccation. Accordingly, approaching planning issues from a 'health perspective' helps to address other contemporary urban problems.

However, it was noted that the integrality of the healthy city concept is relatively new. In the past, discussions about health were substantially centred around sickness, mortality, and environmental aspects, such as air quality. Only recently, health has been identified as an integral topic involving both the social and physical domain. The strong dependencies between the social and physical dimensions of health make health an integral topic. This integrality makes health a politically complex topic, specifically concerning the question of responsibility. As the topic percolates through various departments within municipalities, siloism occurs. As departments often work on the health topic independently, health often becomes an implicitly discussed topic. Consequently, planning a healthy city becomes imminently difficult. However, municipalities are striving to improve the relations between the physical and social domain, as elaborated on in the following quote:

> You are always looking for the integrality of a solution. Currently, this is especially evident with the social domain. …We are still far too much boxed in. So, we are now really going to try to establish a lot more contacts with the social domain and collaborate with the social domain to develop programs. We want people to move more from their homes again, you want to do that in collaboration with the social domain or link programs to your physical interventions. So, that is what is going on at the moment, and, of course, that is always the biggest challenge in an official organisation. Ensuring those horizontal cross-connections between domains, that is the most complicated. (Expert 2)

The municipal experts highlighted the following four problems that complicate the planning of healthy cities: (1) limited collaboration and coordination between the physical and social domain, (2) conflicting interests that need to be accommodated in a limited space, (3) limited capacity, and (4) budgetary constraints. The physical and social domain are generally separate departments in municipalities. The departments often address the health topic from their perspective without involving the other relevant domains. Next, conflicting interests need to be accommodated in a limited space (for example, housing and the preservation of green spaces). This raises the question of which topic will be given priority. On top of this, municipalities often cope with capacity problems, leading certain topics to be forgotten or not deemed relevant at the moment (inertia of action). Lastly, municipalities want to change and transform but have limited budgetary resources; trade-offs for resource allocation are necessary. Related to the last point is the budgetary issue of maintenance; maintenance also requires profound financial costs. Another, though minor, problem mentioned was the challenge of enforcing people to use the healthy infrastructural components of the urban environment, such as the biking paths, footpaths, and green spaces.

In response to these problems, the experts emphasised a combination of factors that help address the problems of planning a healthy city. The factors primarily focus on what the necessities are instead of how the necessities can be shaped. The factors can be summarised as follows:

- **Knowledge and information sharing between and within organisations**. Sharing knowledge and information among and within municipalities and with knowledge institutions helps to ensure that available knowledge and information can be applied widely. Furthermore, connections between different organisations and domains are enhanced, fostering collaboration. Essential to this factor is raising awareness of the interrelatedness between the physical and social domain. To effectively address health issues and plan for a healthy city, the dependencies between the physical and social domain need to be recognised. This way more integral solutions can be devised based on the knowledge and information present in both domains. Moreover, it was encouraged to develop an extensive network to enhance knowledge and information sharing. An extensive network ensures fast connections to share knowledge and information. Within a municipality can be thought of multidisciplinary and inter-departmental teams. Outside a municipality can be thought of multidisciplinary network with, for instance, research institutes and hospitals.
- **Awareness of context-specificity.** While knowledge and information sharing is encouraged, knowledge and information should be applied cautiously. Municipalities have different local contexts; the effectiveness of practices may differ across municipalities. Therefore, it is also necessary to involve local people in planning to address context-specific needs and desires.
- **Awareness of strengths and weaknesses.** Understanding the strengths and weaknesses of a municipality regarding the topic of health, helps to prioritise tasks. Moreover, it enhances targeted, meaningful, and necessary interventions.
- **Clarification of added value of necessary interventions for the greater good.** Municipalities may face opposition regarding necessary interventions aimed at planning a healthy city. For example, municipal plans interfere with plans of non-municipal landowners in terms of finances. In these cases, clarifying the added value of necessary interventions for the greater good is crucial to ensure compromises and implementation of the necessary interventions.
- **Ensuring sufficient capacity.** A significant problem of planning a healthy is capacity constraints within municipalities. Therefore, naturally, a factor contributing to addressing the challenges of planning a healthy city, is ensuring sufficient employees can dedicate their time to the topic.
- **Continuity and ability to make radical decisions.** Continuity in policy is essential to ensure progress and avoid disruptive changes that hamper progression. Continuity often requires making potentially radical decisions. Municipal administrations have a four-year cycle, but changes made in the physical environment often take longer. Consequently, municipal administrations tend to focus on the fast gains (for political capital) instead of long-term benefits when making decisions. Accordingly, to ensure progress in terms of planning a healthy city, radical decisions are required that may involve loss of political capital but are beneficial for the longer term.
- **Incremental approach to planning (start with easily achievable goals).** Related to ensuring continuity is taking an incremental approach to planning. Taking an incremental approach to planning assures progress, albeit small, can still be made without needing an all-comprising solution first. While often first sought for an all-comprising solution, the incremental implementation of policy was found critical to help address the challenges of planning healthy cities. As was indicated, allocating more budgetary resources to implementation than planning is crucial. In other words, start with the easily achievable goals first and implement them immediately. An incremental approach also allows for frequent evaluation and timely intervention when necessary.
- **(Corporate) culture.** Related to all the factors above is corporate culture. Commitment, dedication, and enthusiasm from within the municipality for the health topic are essential to address issues concerning health. As the board of mayor and aldermen are at the top of the organisational structure in a municipality, their involvement plays an essential role; they are able to give particular attention to the topic and ensure everyone in the municipality is aligned.

Besides these factors, circumstantial factors were also said to influence the planning of a healthy city. In that sense, flexibility to cope with unexpected circumstances is also a critical success factor.

4.2.2 Importance of the ranking attribute health

Though planning a healthy city was considered a complex issue, it is a frequently discussed topic within the municipalities. A healthy living environment and healthy lifestyle have gained greater importance since the COVID-19 pandemic, particularly the revaluation of outdoor spaces. However, the extent to which health is discussed within municipalities differed. This is due to differences in local contexts, including political composition, leading to different context-specific issues and priorities.

As discussed above, health has recently gained more importance as an integral topic. Where this was not the case in the past, municipalities now have departments and/or specific employees solely dedicated to health. The growing emphasis on health in municipalities is due to two major causes. The first cause is the Environment and Planning Act which is expected to take effect in January 2024. One of the main pillars of the Environment and Planning Act is health; the Act strives to promote a healthy and safe living environment. The municipal experts showed that health has now become an essential component to include in the environmental visions that are being formulated. As it soon will be legally laid down, health will and has become a more prominent topic on the municipal agenda. The second cause is the wider recognition that the urban environment influences health and that health is fundamental for urban well-being. Various organisations, such as higher government tiers, provinces, environmental services (Dutch: Omgevingsdiensten), and the public health services (Dutch: GGDen), also recognise that the urban environment influences health. Consequently, there is a growing top-down emphasis on health. That being the case, the healthy cities expert indicated that the discussion of whether and if the urban environment influences health makes way for the discussion of how both are related and how health can be planned for:

> What I find crucial in this is that for the first time, actually at the very beginning of the Act, it states as the starting point, and well that surprised me enormously, that the ambition of the Environment and Planning Act is to promote a healthy and safe living environment. Then I thought, but there we suddenly have a fantastic capstone. So, we do not just have to talk about what it [health and the urban environment] has to do with each other, but it must have something to do with each other, and in that you see now that the discussion has shifted enormously. When they ask me now, they do not ask me to explain, but they say, yes, we know it is related, but how. So, the question of the why has shifted enormously to the how. (Expert 1)

Whether the HCI also contributed to the increasing importance of health within municipalities remains uncertain, according to the municipal experts. The municipal experts indicated that the index has the potential to reinforce the importance of health as, for example, municipal council members asked questions about the performance of a municipality in the index. However, this was often only temporarily to indicate the urgency and importance of the topic on a short term. Even so, this does not make the topic disappear altogether; the standard and ongoing municipal duties on the matter were still resumed. Nevertheless, municipalities increasingly acknowledge the importance of a healthy city, and increasingly consider a health perspective in their planning processes from the start.

4.2.3 Performance on the Healthy City Index

The interviewed municipal experts were employed by municipalities with different rankings on the HCI (see Methods). In general, the municipal experts expressed to be somewhat surprised by their municipalities' performance on the HCI, because their municipality was either ranked higher or lower than expected. However, some municipal experts were not surprised by their municipalities' performance. Nevertheless,

no clear relationship between municipal experts being surprised and the height of their municipalities' rank on the HCI was identified.

The municipal experts pointed out that the performance of municipalities on the HCI also led to questions raised by municipal council members. This is often due to the media picking up on index results:

> Well, panic. We were like, how could this be? I think we are doing extremely well and then you drop on the Healthy City Index. So, it was immediately on Omroep Friesland, where the alderman was interviewed. So, things like that do happen. So, it does have an effect. (Expert 2)

In cases of expressed surprise, the municipal experts better understood their municipalities' rank after a detailed look at the index. However, as the municipal experts indicated, most of the time, the weaknesses and strengths identified by the index were already known in the municipality. In that sense, the index confirmed what was already known in the municipalities. In most cases, the municipal experts also put their municipalities' performance into perspective related to a municipality's local context. This is exemplified by the following quote from Expert 2 regarding the limited influence of the municipality on the data unit of accessible healthcare facilities:

> Then you look at what knobs can we turn. Because on some things you just cannot exert any influence, such as healthcare. There is a huge shortage of family doctors in the north. The succession is very problematic. Can you do anything about that as a municipality? I do not think so much. So, some knobs you cannot turn, other knobs you can. (Expert 2)

Regarding improving performance on the HCI, the municipal experts indicated that their municipality, to the best of their knowledge, was not actively striving to enhance its performance on the HCI. Generally, municipal experts considered performing well compared to a municipalities' own goals and ambitions more important than actively striving for a higher rank on the index. However, as the municipal experts also indicated, at a higher governmental tier, perspectives could differentiate relating to actively striving for a higher rank on the index. Nevertheless, the municipal experts emphasised that municipalities look at and respond to the needs of their residents, and society, instead of focus on performances on city rankings and indexes. Accordingly, the index was considered a valuable supporting tool rather than an end goal. To elaborate on this, one municipal expert expressed that the method to rank municipalities is of more value to municipalities than the actual rank a municipality got on the index. Another municipal expert expressed that solely focusing on performing well and achieving a higher rank on the index is mismanaging public money.

Additionally, during the interviews with the municipal experts, it was discussed whether residents of a municipality were surprised by their municipalities' performance on the HCI. The municipal experts had limited knowledge of this due to limited direct contact with residents. What was, however, striking, is that several experts were surprised by the ranking of the municipality of Utrecht. Utrecht is seen as an example for the Netherlands in dealing with healthy urbanisation and a healthy living environment. The municipality is said to have embedded the healthy city thought quite well in their policies. However, Utrecht scored relatively low (ranked 14 out of 20) on the index.

4.3 City rankings and indexes

Despite the municipal experts being familiar with city rankings and indexes, not all were familiar with the HCI. Other indexes, such as the Monitor Brede Welvaart (English: Monitor Broad Prosperity) and the Atlas voor gemeenten (English: Atlas for municipalities), were also mentioned during the interviews. The municipal experts who were familiar with the HCI pointed out that the index is one of the many existing city rankings and indexes. Consequently, the HCI was considered one of the many available information resources to help plan a healthy city. Some municipal experts expressed they had wanted to have a more

thorough look at the index but were unable to do so, most of the time due to time constraints. However, despite not being the objective of this study, the interview renewed curiosity of various municipal experts in the HCI.

In the sections below, I detail on city rankings and indexes as discussed in the interviews. I do this by elaborating on city rankings' and indexes' perceived limitations and potentials. After that, I discuss the attitudes toward city rankings and indexes. Based on the perceived limitations, potentials, and attitudes, I present the discussed improvements for city rankings and indexes. It is essential to highlight that, due to the unfamiliarity with the HCI in some cases, the perceived limitations, potentials, attitudes, and points of improvement are a combination of more specific perspectives on the HCI and more general perspectives on city rankings and indexes.

4.3.1 Perceived limitations and potentials

The perceived limitations and potentials are a mix of more general and specific points for the HCI. This is because not all municipal experts were familiar with the HCI. In these cases, the perceived limitations and potentials were discussed more generally. I first discuss the perceived limitations, then the potentials.

4.3.1.1 Perceived limitations

The perceived limitations as perceived by the municipal experts were as follows:

One-sided view of factors determining health due to focus on the physical environment. The HCI focuses on the design of the urban environment to classify and define a city as healthy. Municipal experts highlighted this as a limitation of the index as health is determined by a variety of factors, not only the physical environment. Consequently, it was concluded that the index gave a one-sided view of the factors determining health. However, as came forward in the interview with Arcadis, this focus was due to Arcadis' expertise and this focus was indicated in the final report.

Incomplete/distorted view of reality. This limitation is two-fold. On the one hand, municipal experts noted that, based on the index, it is frequently implied that a healthy urban environment also means healthy residents. Though, as was pointed out, residents' health is influenced by more than the municipalities' design. One the other hand, municipal experts expressed concern that the index masked significant health differences across neighbourhoods in municipalities. Therefore, municipal experts wondered whether the index gave a complete view of reality. Furthermore, the limited scope of the HCI was mentioned. It was pointed out that only assessed 25 municipalities were assessed, which means that being the healthiest city (in the Netherlands) does not necessarily make it the healthiest city in the entire country.

Neglect of local contexts. One of the most mentioned limitations of city rankings and indexes was the neglect of municipalities' local contexts. Municipalities are situated in their own local context, such as development history, population size and density, and political colour. The municipal experts found this context crucial regarding what interventions a municipality can implement. Consequently, city rankings and indexes were accused of comparing apples with oranges; the differences between municipalities are too diverse, making them incomparable quantities. To exemplify this point, the example of air quality was often mentioned. In the northern part of the Netherlands, the air quality is generally better than in the western part of the Netherlands due to the natural wind direction. Municipalities cannot influence the wind direction, resulting in some municipalities being one step ahead:

> And I, myself, looking at that list, I think, well, there are also municipalities that will never become number one. It is also a relative list because you just cannot properly compare some places because the base you start from was already different. (Expert 4)

Equal weighting of assessed characteristics. Another frequently mentioned limitation was the equal weighting of the assessed characteristics. Some characteristics might have a more significant contribution to health than others. As example a municipal expert mentioned to wonder whether the distance to healthcare facilities was as important as living in a green urban environment. However, the municipal experts also pointed out that assigning weights to characteristics is complex and additional research is required, although encouraged if it would generate meaningful results.

Private company (Arcadis) conducting the 'research'. One municipal expert highlighted that the research (the index) being conducted by a private company, Arcadis, raises questions. When people hear the word 'research', they often think about a research institute or university conducting the research rather than a private company. This could raise questions about the purpose of the research, thus, the index.

No display of the (composite) index values. The HCI does not display the (composite) index values. It was mentioned that this makes it complex to indicate how significant the magnitude of the differences between municipalities are and for municipalities themselves over the years.

Focus on municipal borders. During the interviews, it was mentioned that a limitation of the index is the focus on municipal borders. To exemplify this limitation, the concrete example of green spaces was mentioned. Outside the municipality's border, there could be/are green spaces that are used and contribute to a health living environment but are not included in the index. As was suggested, green spaces outside the municipal borders which are a short bike ride away could be more valuable, than green spaces within the municipal borders which are a long bike ride away. Additionally, it was indicated that the index, and indexes and city rankings in general, do not consider nor reflect on these border effects, which can either have a reinforcing or undermining impact.

Tension between being supportive and creating obligations. A municipal expert indicated that although the index supports municipalities in improving, it also creates obligations. Put differently, an image is imposed on a municipality without asking. This concerns obligations in terms of (continued) performance.

Lack of showing concrete interventions. The municipal experts pointed out that the index is too high over for municipalities to act based on it. Municipalities often take an area or neighbourhood-focused approach, which does not align with the municipal approach of the index. Accordingly, it was pointed out that city rankings and indexes often lack information on specific interventions that municipalities can implement to improve.

Lacking variety of levels of research. As indicated for the limitation above, municipal experts indicated that municipalities often take an area or neighbourhood-focused approach to improve their municipality. As the HCI adopts a municipal level, it, to some degree, does not correspond to the approaches taken by municipalities. The municipal experts expressed this as a limitation if they had wanted to use the index.

Impression that more is better. The municipal experts pointed the index creates the impression that more of a certain characteristic is better, going beyond the law of diminishing returns. As was pointed out, not all characteristics have a linear relationship to health. In some cases, the more, the less effect. An example mentioned was the availability of green spaces; the effect of adding green spaces in municipalities eventually reaches a point of saturation. Additionally, it was remarked that a certain balance between optimising characteristics was needed; not all characteristics could be optimised simultaneously. Concerning this, a municipal expert also wondered when is 'enough'. It was pointed out that the index does not highlight this.

Lack of clarity about the purpose. Few municipal experts indicated they did not quite understand the index's purpose. Whether it was to inform, activate municipalities or acquire contracts for Arcadis. A municipal expert pointed out that the purpose of the index seemed to be the stimulation of better health

policies and design but found it odd that the index also included characteristics on which municipalities have limited to no influence.

In conclusion, the perceived limitations mainly concern limitations that contribute to municipalities' use of the index. There were relatively limited concerns about the method as municipal experts had not thoroughly reviewed the methods. The most significant perceived limitations mentioned were the equal weighting of characteristics, negligence of local context, and the focus on the physical environment, specifically for the HCI. The municipal experts indicated that finding solutions to these limitations and including them in the index is complex. Nevertheless, for some of the limitations, improvements were proposed. These improvements are discussed later in this chapter.

4.3.1.2 Perceived potentials

The perceived limitations as perceived by the interviewed municipal experts were as follows:

Reaffirmation and evidence of existing (and urgent) problems. The municipal experts indicated that the index reaffirmed existing problems within a municipality. Accordingly, the index functions as evidence to show the presence of the problem. Simultaneously, it reinforces to intervene and formulate solutions and projects to address these problems. Additionally, the index shows the topic's urgency to the whole municipality. Consequently, it enhances support for interventions needed and prioritisation of topics on the municipal agenda.

Stimulation of inter-municipality learning and collaboration. It was frequently mentioned that the index could contribute to inter-municipality learning and collaboration, for example, by sharing knowledge and best practices. The index supports in identifying municipalities that can be learned from. Though perceived as a potential, the municipal experts also indicated that it is unknown whether collaboration also happened based on the HCI specifically. The municipal expert from the highest-ranked municipality, however, indicated that municipalities had already contacted the municipality to learn more about their practices. Another municipal expert pointed out that the index does not provide a contact list, such that the index stimulates contacting other municipalities. As the municipal experts also highlighted, municipalities are often already in contact via other networks due to participation in various city deals for multiple domains assessed by the HCI. Here, they share best practices and knowledge, and there could be talked about the index.

Stimulus to improve the urban environment. As the city rankings and indexes show a municipalities' strengths and weaknesses, the municipal experts pointed out that it stimulates to enhance and continue (healthy) urban development.

Make a complex topic insightful and communicable. The potential of city rankings and indexes to make a complex topic insightful and communicable is related to the stimulus to improve the urban environment. It was mentioned that the HCI report clearly showed what municipalities were assessed on and was well-organised. Furthermore, it was explicitly mentioned that the domains made the HCI yet more insightful. The domains assured the HCI approached health from an integral perspective, specifically regarding the design of the urban environment. It was mentioned that the use of domains by the HCI showed that health is an integral topic, and a shared responsibility of various departments within the municipality. Additionally, it was pointed out that making the topic insightful helps to communicate about it.

Focus and attention given to the topic. Related to the potentials above is the potential of increased attention and focuses given to the topic. As was pointed out, the index helps to show the topic's importance and urgency and helps to start the conversation. This potential was considered the most important by the municipal experts.

Conducting interviews prior to the publication of an index. This potential specifically concerns the HCI. During the interviews, it was indicated that Arcadis conducted interviews prior to the ranking to hear what municipalities changed or are doing after the first edition of the HCI. These interviews were considered valuable, as they showed that the initiator was not only focused on data, but also on the stories behind it.

Arcadis as attractive party for future tenders. During the interviews, municipal experts pointed out that, considering the knowledge used and applied in the HCI, Arcadis was considered an attractive party to consider for future tenders from municipalities. Consequently, the index has market advantages for Arcadis, considering it is a private company competing for clients.

Marketing of the municipality. It was also mentioned that the index, and city rankings and indexes in general, contribute to the municipality's marketing to externals. Depending on a municipalities' ranking, this could be either negative or positive. For example, a high ranking may attract businesses, while a low ranking may cause businesses to move.

In conclusion, the perceived potentials mainly concern the perceived added value of city rankings and indexes to support municipalities by providing evidence, making the topic communicable, and showing the topic's urgency. The perceived potentials of giving attention to a particular topic, the reaffirmation of existing problems, and the stimulus to improve the urban environment were significantly mentioned by the municipal experts.

4.3.2 Attitudes

The attitudes toward the HCI, and city rankings and indexes in general, differed per municipal expert. However, no apparent difference was found between a municipality's performance on the HCI and a municipal expert's attitude toward the HCI. Attitudes were rather influenced by subjective perceptions of city rankings and indexes in general. Nevertheless, a few findings regarding attitudes were found.

Firstly, the attitudes of the municipal experts toward city rankings and indexes, consequently their perceived added value, were situated in a relativistic perspective. This relativism was identified in multiple aspects. For instance, the positions of municipalities on the index were often undermined by relativising performances based on local contexts. Moreover, it was pointed out that city rankings and indexes are not 'holy', and the municipality possesses better and more detailed knowledge of its problems than a city ranking or index, among other things, due to a municipalities' familiarity with its local context. Furthermore, municipal experts highlighted that city rankings and indexes often do not show the whole, nor an objective, picture. As stated by a municipal expert, using other indicators would create another 'truth'; another perception of reality. Moreover, municipal experts raised the question of whether the index would change significantly if all assessed municipalities improved. A municipal expert indicated that if all municipalities improved, there was a chance of dangling at the same rank over and over, leading to a sense of powerlessness regarding a municipality's performance. Related to this, it was expressed that, while the city ranking or index might imply, a low-ranked municipality is not necessarily performing a bad job. On top of that, municipal experts pointed out that city rankings and indexes are difficult to implement as strategic steering tool, which is exemplified by the following quote:

> We are a kind of tanker. You can make small course changes. You cannot just say we are going to turn 180 degrees in the other direction. … you also have to deal with the culture … You just have to dare to make more radical choices, and you are also punished by that, I think, by such an index. (Expert 2)

In that sense, it was indicated that a deeper analysis is required to use the index as a strategic steering tool, if that was the intended purpose of the index. Moreover, it was stated that the wide availability of city rankings and indexes decreases the perceived added value of a single city ranking or index per se. Despite

the relativistic perspective, generally, the municipal experts highlighted that city rankings and indexes are valuable instruments to show a specific topic's urgency.

Another finding was that while the index raises awareness in the municipality regarding the assessed topic, the index is often put aside in an imaginary drawer. The municipal experts pointed out that none of the municipalities probably lie awake at night worrying about the results of the HCI. In most cases, there is looked at the index once published, and municipal council members may ask questions, but soon after, the index is often put aside in an imaginary drawer, and the standard and ongoing municipal duties are resumed.

Accordingly, the municipal experts indicated that the extent to which a municipality looks at and engages with an index varies based on circumstantial factors. The circumstantial factors that were mentioned were engagement with other topics and tasks (time constraints), amount of (political) attention given to the index, current adoption and use of other city rankings or indexes, alignment of the index's data with existing municipal data, availability of employees to facilitate a thorough analysis of the index (capacity constraints), and organisational culture. As such, several municipal experts also highlighted that the attitude toward city rankings and indexes depends on how higher tiers of government react to the index:

> Each layer of government or each layer in the organisation reacts differently to it [the index], depending on whether directors or management really want to go full steam ahead with it or whether they say, well, that is nice, we are already doing a good job. It is the reaction of the different levels within an organisation that determines what you do with it. (Expert 4)

Despite these findings, the municipal experts showed satisfaction with the existence of city rankings and indexes as they show a topic's urgency and are a valuable tool for comparing municipalities using a standardised method. Consequently, municipal experts generally expressed satisfaction with the HCI and encouraged its continued development. The following two quotes illustrate this:

> Apart from the fact that there are just a lot of them, I am very happy that these kinds of things are published a lot because there is an urgency to deal differently with our spatial development and how we build cities and how we deal with nature and greenery. So, anything that draws attention to that, to that importance, I actually find of added value. So, in that sense, I think it is very nice that this is happening. And I think it is good to keep underlining those kinds of interests, also as Arcadis. (Expert 12)

> And it is very good that health is now receiving more attention. And with that, you could at least reinforce the notion a bit more that health is connected to everything and that you have to improve a lot of factors if you want to maintain health. So that is only good, I think. But that is also a question of perseverance. You very often see with these kinds of policy or data tools that it subsides again after a short time and then you go back to your traditional intuition and experience. You would then really have to persevere for years, years, years to really put it on the map and use it as an instrument. (Expert 8)

To summarise, while the attitudes differed, they were situated in a relativistic perspective. It was reasoned that the HCI, and city rankings and indexes in general, do not necessarily show the whole picture, might give a sense of powerlessness, and should only support municipalities. Nevertheless, in general, the municipal experts expressed satisfaction with the existence of city rankings and indexes.

4.3.3 Recommendations to improve city rankings and indexes

Related to the discussed limitations, potentials, and attitudes, municipal experts proposed several points of improvement for city rankings and indexes. Some points are specific to the HCI, while other points of improvement are more general. In Table 8, the recommendations are summarised. Note that not for each discussed limitation a point of improvement was discussed.

Table 8 Points of improvement

Points of improvement	Explanation
Include rural areas	Scholarly discourses often focus on healthy cities. However, the municipal experts considered it important to acknowledge that the gross of municipalities in the Netherlands is in rural areas. Therefore, the municipal experts wondered what a healthy design looks like in more rural areas. These municipal experts considered it beneficial to the index to highlight what healthy design in rural areas looks like.
Include local context (weighting or mention)	To address the limitation of the context-specificness of municipalities, municipal experts indicated that considering local conditions could benefit the index. However, there was no equivocal solution on how to do this. While some municipal experts proposed to include it as a weighting factor, for others, a simple mention of the context-specificness in the report sufficed. The municipal experts stating the latter argued that the context is something municipalities have to deal with. They argued that the index is about the general picture, and it is the municipalities themselves responsible for including their local context in the analysis of the index. Accordingly, these municipal experts argued that including a municipalities' local context as a weighting factor in the index would give a distorted view of reality. Part of this point of improvement was the suggestion to mention and include information about the valuable spaces outside the border of the municipality that contribute to its health, either positively or negatively.
Include cultural, social, and economic characteristics	The municipal experts highlighted that health is determined by more than the design of the urban environment. Therefore, it was proposed to include cultural, social, and economic characteristics such that the index gives a more integral overview of factors influencing health. However, while some municipal experts argued that this would be a promising point of improvement, they also indicated that including these aspects in the index made by Arcadis would probably go beyond the scope of the HCI. These municipal experts suggested it would be better for municipalities or care institutions to take on this job. Nevertheless, it was agreed that a connection between the physical and social domain would be interesting to include. Consequently, whether a design focused on a healthy city also contributes to healthier residents. As part of this point of improvement, municipal experts also suggested including an inhabitant perspective. This was suggested to show how residents perceive a healthy city and how they would like to see their municipality be improved.
Include a weighting of characteristics	The characteristics in the HCI have the same weight. Municipal experts expressed interest in assigning weights to the characteristics based on their importance in contributing to a healthy city. However, how to determine this weighting was found unsure by the municipal experts. It was suggested to base the weighting on the strength of the relationship between specific characteristics and health. To do so, further research on these relationships and their differences in strength and importance is required. Alternatively, some municipal experts argued that a simple mention in the report of different contributions of characteristics to health could also suffice.

Points of improvement	Explanation
Refine the research in terms of research levels	The municipal experts indicated that different research levels would be promising for the index. A smaller level, like neighbourhood level, was encouraged. A neighbourhood level would more precisely highlight where the strengths and weaknesses in a municipality are. This enhances the identification of specific interventions based on the index. Though, it was also indicated that only for some domains and characteristics a smaller level was suitable. Also, it was noted that an index on a higher level, such as provinces, could be interesting. Municipalities depend on the province and higher governments for certain health policies. Moreover, it was suggested to include other categories, for example, peripheral, province / capital, and Western – Northern municipalities. However, the municipal experts acknowledged that incorporating this all in one index was complex and perhaps undesirable.
Include a set of specific (example) interventions	To address the limitation of limited concretisation, the municipal experts suggested including a set of specific interventions that municipalities could implement to improve their urban environment. Municipal experts wondered how to proceed, given the results of the index. A deeper analysis is required, and a set of concrete (example) interventions were found interesting to include in the index's report.
Increase the time between new editions of the Healthy City Index	Some municipal experts argued that the time between new editions of the HCI could be extended to identify more significant differences in the urban environment. Radical changes in the urban environment often take longer than two years before results are identified. However, some municipal experts discouraged changing the time between new editions of the HCI. Accordingly, every four years was discouraged as this aligns with the municipal administration cycles. In this case, the index would probably be used as a benchmark, and no improvements could be seen during the same administrative cycle. This could discourage the current municipal administration. Municipal experts suggested having the index at least twice in one municipal administration cycle to track progress. Consequently, for other municipal experts, every two years was not identified as a major problem and needed no improvement.
Compare with international cities	The municipal experts expressed interest in an index in which their municipality was compared to cities on an international level. This would provide insights into their municipalities' position worldwide.
Include the (composite) index values	To address the limitation of not showing the (composite) index values, it was suggested to include the (composite) index values in the report. This would provide valuable insights for municipalities on the magnitude of the differences between municipalities and for municipalities themselves over the years.
Indicate where the most gains be made	The municipal experts argued that specific characteristics experienced a law of diminishing returns (after a certain point, the added total of a characteristic's gains and benefits drops). Consequently, it was suggested that it would be interesting to know for what characteristics the most gains could still be made. Accordingly, this information can guide municipalities in deciding what to improve.

In addition to the aforementioned points of improvement, some specific ideas were suggested. Some municipal experts proposed specific ideas, which were as follows:

- **Facilitate the index as a (digital) monitor.** A municipal expert suggested creating a (digital) monitor to see how municipalities scored and where municipalities could also use sliders to assign weights to characteristics based on what that specific municipality finds essential. In addition, it was suggested to make this monitor real-time to see the effectiveness of interventions quicker. However, it was acknowledged that making a monitor would be complex.
- **Conduct a survey after publishing the index.** Most municipal experts pointed out that there was no contact with Arcadis to give back their criticisms toward the index. Therefore, a municipal expert suggested conducting a short survey after the publication of the index to gather feedback on the index. This feedback could be used to improve the index.
- **Include a list of contact persons per municipality.** To enforce inter-municipality learning and collaboration, a municipal expert suggested including a contact list in the index. This way municipalities could quickly contact other municipalities based on their performance.
- **Include best practices of each municipality that scores the highest in the different domains.** It was also suggested to include best practices of municipalities that score high in the different categories to show their practices, how they differ from other municipalities, and what can be learned from them.
- **Offer free advice for low-ranked municipalities.** A municipal expert suggested offering low-ranked municipalities free advice on improving their urban environment. This suggestion was brought forward from the argument that Arcadis, as a private company, makes a name for itself on the back of the municipalities that scored the worst.

Regarding the aforementioned points of improvement, one municipal expert emphasised that it is important to cautiously improve the index, being aware of the index's intended character and the degree of scientificity:

> And I also think you do not want to make it too scientific, because then you get all sorts of discussions about it. So, you have to keep it a bit light-hearted. Of course, you have to start from facts, just public data, and your research approach has to be correct, of course, but you also have to avoid getting into a kind of scientific discussion. The winking character, at least that is how it [the index] comes across to me, the light-hearted character that, I think, it has to keep above all. (Expert 6)

In conclusion, the municipal experts proposed various ways city rankings and indexes, specifically the HCI, could be enhanced. However, a balance is required between the intended purpose and character of the index and the degree of scientificity when improving. Nevertheless, the points of improvement provide insights into how city rankings and indexes could be enhanced.

4.4 City benchmarking: Inter-municipal competition

Through benchmarking, city rankings and indexes facilitate the process of comparing cities/ municipalities. In this section, I add on the results of the performance on the index and attitudes toward city rankings and indexes (see section 4.2.3 and 4.3.2). Specifically, I discuss what the municipal experts expressed on inter-municipal competition resulting from city benchmarking.

Generally, the municipal experts did not experience inter-municipal competition regarding their rank on the HCI. As pointed out in the municipal experts' interviews, the competition aspect of city benchmarking seems current to contemporary times. This was highlighted by Expert 2 as follows:

> But it is not about winning at all, you know. For me, it is about why are you doing these things. You want people to take the chances they get … I also think a little bit that it is the zeitgeist. Just look at all those games on television, it is all competition shows. Robinson, The Voice, I do not know, all that kind of stuff. That is all competition. Apparently, we need that. (Expert 2)

The perceptions regarding the competition aspect of city benchmarking did not differ based on an experts' municipalities' ranking on the HCI. As the municipal experts mentioned, each municipality deserves to be healthy. Consequently, the municipal experts experienced city benchmarking more as a potential way to enforce collaboration and information sharing between municipalities, therefore, stimulating innovation rather than enforcing competition between them. Though, as previously indicated, it is unclear to the municipal experts whether collaboration also happened based on the HCI specifically.

Furthermore, as several municipal experts discussed, the primary focus of a municipality should be its residents, rather than competition with other municipalities. Moreover, when a municipal employee is employed with another municipality later on in their career, that employee presumably still tries to achieve the best result possible for that specific municipality. Therefore, the internal competition between departments was perceived to be present more than the external competition with other municipalities. In relation to this, the municipal experts indicated that it is more interesting for municipalities to see how they develop over the years rather than how they are ranked compared to other cities and compete with them. In that sense, the experts also indicated it was valuable for municipalities to know how they performed compared to their own policies and ambitions rather than other municipalities. Though, the societal need to compare to other municipalities, also considering political reasons, remains present. Accordingly, it is important to highlight that the municipal experts indicated that the perceptions about the competition aspect regarding city benchmarking could differ for higher governmental tiers.

In conclusion, the municipal experts did not perceive competition as a significant aspect of the index. It rather enforces to share best practices and stimulated improvement. The lack of competition comes from municipalities' focus on acting in the interests of their residents and employee turnover. Consequently, the insight into the development of municipalities over the years in indexes was found to be more valuable than the competition aspect. Though there seems to be a societal trend of comparing, the competition aspect is not significantly perceived as important.

4.5 Planning of healthy cities using city rankings and indexes: Evidence and data

City rankings and indexes have the potential to provide evidence and data to help guide the planning of healthy cities. In this section, I detail the perspectives of the municipal experts regarding using city rankings' or indexes' indicators' data in planning healthy cities.

The municipal experts acknowledged that planning is still frequently based on subjective perceptions, such as beliefs and traditions, but also expressed a trend of using data-driven approaches within municipal tasks. However, the municipal experts also indicated uncertainty regarding the effect of city rankings and indexes, in some cases specifically the HCI, on this trend. Larger societal trends, such as digitalisation and increased demand for transparency, were considered to play a more critical role in data-driven approaches. However, as was discussed with a few municipal experts, the growing appearance of city rankings and indexes could also be considered one of these societal trends. Nevertheless, it was unclear to the municipal experts whether the HCI, specifically, led to more data-driven approaches regarding the planning of healthy cities. This perspective was generally the same for the municipal experts and did not differ based on their municipalities' ranking on the HCI. Accordingly, this relates to the municipal experts not experiencing that their municipality actively steered based on the insights provided by the HCI.

In general, the municipal experts pointed out that using a city ranking's or index's data depends on several factors, including the following. Firstly, the depth of the data plays a critical role; the more detailed the data, the more valuable for municipalities, and the more a city ranking or index will probably get used. More detailed data provides more concrete and usable information. Secondly, the perceived added value of a city ranking's or index's data; municipalities have their own resources, such as GGD research, and using a city ranking's or index's data depends on their alignment to current work processes. Nevertheless, the municipal experts expressed that city rankings and indexes, and the data they contain, have the potential to contribute to a more significant focus on using indicators and data in the planning of healthy cities. City rankings and indexes identify, using indicators and data, problems and potential solutions. Consequently, using city rankings and indexes as information sources, potentially provides evidence for formulating tasks, identifying problems, and formulating potential solutions. How city rankings' and indexes' data can enhance municipal process was reasoned by Expert 13 as follows:

> As a municipality, you can only spend your euro [budgetary resources] once, the question is what will you use it for. Then it is, of course, important to know where our efforts are most needed and data is, of course, very helpful with that. (Expert 13)

Additionally, the healthy cities expert indicated that large municipalities tend to focus more on data and indicators than smaller municipalities because larger municipalities have more data available and more capacity to measure trends. Regarding data availability, the healthy cities expert pointed out that municipalities would benefit from partnerships with knowledge institutions to receive more data. As all municipalities interviewed were large municipalities, there could not be assessed whether this was also the case for the HCI.

Concerning the use of data in planning the urban environment, the municipal experts pointed out that a balance between using qualitative and quantitative data is important. Finding a balance was found necessary due to the opinion that feeling comfortable somewhere or something that appeals to beauty cannot fully be expressed in quantitative data. By focusing on numeric data, subjective perceptions of a place might get neglected and ignored.

In conclusion, the impact of city rankings and indexes on municipalities' data-driven approaches was unclear. However, city rankings and indexes are said to have potential for a ensuring a focus on indicators and data, but this depends on several factors. Moreover, it was indicated that a middle ground between using qualitative and quantitative data is required for planning the urban environment.

DISCUSSION

Het Burgje, Odijk

Source: Arcadis Landscape Architects (n.d.-f)

5 Discussion

Before concluding and answering the research questions, I first discuss the results. Consequently, in this chapter, I discuss the research implications. First, I discuss parallels and new insights of the results in relation to the literature review. Thereafter, I highlight the practical implications of the current study.

5.1 Discussion of the results and theoretical implications

In this section, I highlight significant parallels and new insights of the results in relation to the literature review. I do this by following the structure used in analysing the results. Accordingly, I first discuss the concept of healthy cities. Thereafter, I discuss the results regarding the topic of city rankings and indexes. Next, I discuss the results regarding the competition aspect of city benchmarking. After that, I discuss the results regarding the topic of planning healthy cities using city rankings or indexes, specifically the use of city rankings' and indexes' data as evidence.

5.1.1 Healthy cities

This section discusses the results regarding the meaning and challenges of planning a healthy city, the importance of the ranking attribute health, and the performance on the HCI.

5.1.1.1 The meaning and challenges of planning a healthy city

The findings regarding the meaning and challenges of planning a healthy city show significant parallels with prior research.

Firstly, this study showed that a healthy city is a multi-dimensional concept, depending on various social and environmental factors. This can be attributed to the different approaches to defining what it means to plan a healthy city, influenced by profession. For instance, urban planners (physical domain) concerned themselves with a healthy design of the urban environment, including initiatives such as increasing green spaces and enhancing opportunities for active mobility. In contrast, social workers (social domain) concerned themselves with the social aspects of health, such as promoting healthy behaviours and addressing health issues, such as smoking and obesity. Consequently, a healthy city is a contested concept. Nevertheless, it became evident that the physical and social domain are inherently related through the concept of a healthy city. The physical domain provides the infrastructure on which the social domain relies and can stimulate healthy behaviours to address contemporary urban health issues. Consequently, based on the results, the conclusion can be drawn that a municipality's physical and social domain need to collaborate and coordinate intensively to plan a healthy. These findings align with observations made in prior research (e.g., Barton & Grant, 2006; Crane et al., 2021; Riley & De Nazelle, 2019; Hoorn et al., 2022; Rli, 2018). Prior research also showed that conceptualisations of a healthy city depend on profession (Riley & De Nazelle, 2019; RIVM, 2018c; Schram-Bijkerk et al., 2016). As the analysis of prior research also concluded, a healthy city needs to facilitate an environment that stimulates healthy behaviours. However, in this study, the municipal experts placed great emphasis on the collaboration and coordination between the social and physical domain to effectively plan a healthy city. While prior research also concluded that different approaches to defining a healthy city exist and various factors determine health, this study extended these prior perspectives by explicitly highlighting the need to coordinate between the social and physical domain to effectively plan a healthy city, coming from practitioners.

Secondly, this study shows significant parallels with the challenges found in prior research regarding planning healthy cities. Based on prior research, the conclusion could be drawn that the challenges of planning a healthy city can be attributed to the multi-dimensionality and complexity of urban issues, and the political nature of planning processes. Consequently, cross-domain collaboration and coordination is often lacking, there are no clear responsibilities, and the effective planning of a healthy city hampers due to a fragmented approach. Moreover, prior research showed that focusing on healthy urban transformations of

the urban environment might not be politically favoured due to the potentially controversial and bold decisions that are required, which lead to potential loss of political capital (e.g., Crane et al., 2021; Riley & De Nazelle, 2019; Rli, 2018; Rydin, 2012, UN-Habitat & WHO, 2020). The current study showed that there are four main challenges that complicate the planning of healthy cities. These were: (1) the limited collaboration and coordination between the physical and social domain, (2) conflicting interests that need to be accommodated in a limited space, (3) limited capacity, and (4) budgetary constraints. Accordingly, the integrality of the health topic, due to the social and physical domain being interdependent, leads to questions regarding responsibility and often an inertia of action. Ensuring the horizontal cross-connections between domains is complicated and influences the planning of healthy cities. Evidently, there are significant parallels with prior research and this study's results.

However, this study extends prior research by highlighting underlying factors that influence the challenges identified in prior research. Specifically, this study indicates that the extent to which the multi-dimensionality of health and political nature of planning processes are perceived as a challenge of the planning of healthy cities, is determined mostly by organisational structures or constraints, such as limited capacity and budget. Consequently, this study affirms the inference drawn from prior research that fundamental changes in organisational structures are required to address the challenges of planning healthy cities. Without capacity, municipalities cannot ensure employees have time to concern themselves with the health topic and/or enforce the connections and coordination between the physical and social domain. Moreover, budgetary constraints lead to 'safe' decisions contrary to the potentially required bold and controversial decisions for planning a healthy city.

Though, some may argue that the capacity and budgetary constraints are contemporary to current times. Recently municipalities are having trouble filling positions, especially within the planning departments (A&O fonds Gemeenten, 2022). Moreover, lately, there are growing concerns regarding budget deficits for municipalities (VNG, 2021). Nevertheless, this study's findings still show that circumstantial factors exacerbate the extent to which the multi-dimensionality and political nature of planning processes influence the planning of cities. Consequently, this study delved further into the factors that complicate the planning of healthy cities based on the challenges found in prior research.

The finding that organisational structures profoundly contribute to the planning of healthy cities is also supported by the factors discussed in this study that could mitigate the severity of the challenges of planning healthy cities. In brief, the discussed factors were: (1) knowledge and information sharing between and within organisations, (2) an elaborate understanding of a municipalities' context, strengths, and weaknesses, (3) a focus on the benefits of necessary interventions for the greater good, (4) ensuring sufficient capacity, (5) ensuring continuity in policy, (6) the ability to make radical decisions, (7) incremental planning, and (8) a corporate culture characterised by commitment, dedication, and enthusiasm toward the topic of healthy cities. These factors significantly align with the functioning of the organisation and the structure of its processes.

Linking the challenges and factors mitigating the severity of the challenges, it is evident that certain factors directly address the challenges of planning healthy cities. For instance, the challenge of limited capacity can be directly addressed by ensuring sufficient capacity. Moreover, knowledge and information sharing between and within organisations directly addresses the challenge of limited collaboration and coordination between the physical and social domain. However, various factors do not directly address the challenges related to planning healthy cities. While this is not necessarily required, it suggests that there could be challenges of planning healthy cities that were not expressed by the municipal experts. For instance, focusing on the benefits of necessary interventions for the greater good implies that the importance of interventions is not universally understood, leading to resistance and affecting the planning of healthy cities.

Moreover, continuity in policy implies that there is currently no significant continuity in policies, challenging the planning of healthy cities. Furthermore, the ability to make radical decisions implies that there may be given no room to make radical decisions within municipalities, or more specifically, within certain departments in a municipality.

Consequently, future research is required to develop a more comprehensive understanding of the challenges of planning healthy cities. Conducting a study in which respondents could express their perspectives anonymously could bring forward challenges that are not readily discussed. Municipal experts may have refrained from sharing certain challenges to prevent undermining their own municipality. Furthermore, it could be explored to what extent the factors identified mitigate the severity of the challenges related to planning healthy cities. Future research is needed to explore their actual impact and effectiveness in addressing the challenges.

5.1.1.2 Importance of the ranking attribute health

This study revealed that health is a frequently discussed topic within municipalities and has gained importance over the years. This finding is hardly unexpected given the significant attention given to health in the upcoming Environment and Planning Act and the attention given to a healthy environment in light of the COVID-19 pandemic. The gained importance of health within municipalities is logical given the current circumstances. Consequently, it is unsurprising that this finding is consistent with prior research suggesting that health has gained importance over the years and is increasingly being integrated into policies (e.g., Barton et al., 2009; Ministerie van BZK, 2019; Reinink, 2020; VNG, 2020).

However, the current study also revealed a shift in the discussion surrounding health; from discussions centred around whether and why health is important to discussions focusing on strategies regarding how to plan for health. This finding implies that the nature of the debate surrounding health changed over time; it highlights an increased awareness of the need to facilitate infrastructures that promote a healthy lifestyle. Additionally, it implies that health has become a more elaborate and detailed aspect in policies. While this finding was not explicitly found in prior research, it can be evidenced through the number of initiatives on various scales, such as the WHO European Healthy Cities Network, the Landelijke Nota Gezondheidsbeleid 2020-2024, and the upcoming Environment and Planning Act. These initiatives are profoundly aimed at informing how health can be strategically and effectively planned for. Consequently, it can be inferred from the current study that these initiatives on various scales have a trickle-down effect concerning the growing awareness of the health topic in municipalities. Through the existence of initiatives on a higher governmental level, the awareness of health as an important topic in municipalities amplifies.

Accordingly,, it was discovered that it depends mainly on the higher levels of management within a municipality whether actions are taken to plan healthy cities. Relating this finding to the research conducted by Riley and De Nazelle (2019) and Kemp et al. (2007) the following becomes evident. Riley and De Nazelle (2019) and Kemp et al. (2007) argue that strong leadership is needed to pursue decisions yielding long-term benefits but are displeasing in the short term. Consequently, the results of this study imply that planning healthy cities also requires short-term displeasing but long-term pleasing decisions.

5.1.1.3 Performance on the Healthy City Index

This study revealed that, generally, municipal experts were surprised by the performance of their municipality on the HCI. This surprise sometimes led to a more detailed analysis of the index's assessed characteristics and resulted in questions raised by municipal councils. The results also revealed that municipal experts place considerable emphasis on performing well compared to a municipalities' own goals and ambitions, and responding to their residents' needs, in contrast to performing well on the HCI. These findings seemingly contradict and raise questions regarding the importance of the ranking of the HCI.

Considering the latter finding, it would have been expected that municipal experts would attach lesser importance to the HCI's final rank and pay greater attention to the individual assessments in relation to a municipalities' own goals and ambitions. Instead, municipal experts often put a municipalities' performance into perspective related to a municipality's local context, leading to the relativisation of performances on the HCI. This implies that the importance of the final ranking is greater than initially acknowledged. These insights also imply a potential oversight of the (methods of the) underlying assessments, as the focus is directed toward the final ranking. Consequently, despite the municipal experts expressing satisfaction with the existence of city rankings and indexes for their ability to highlight an urgent topic, the findings of this study bring the importance of individual assessments in city rankings and indexes into question as mechanisms to draw attention to an urgent topic as often only the final ranking is considered. Though these findings seem surprising, they align with previous scholars' work. Notably, Giffinger et al. (2010) and Leff & Petersen (2015) critiqued the emphasis on the final rankings of city rankings and indexes. Their criticism shows significant parallels with the findings of the current study.

Regarding improving the performance of a municipality on the HCI, this study revealed that municipalities are not actively and purposefully improving their performance. The HCI was instead used as an initial supporting tool to reaffirm existing problems and raise awareness on the health topic. This finding is consistent with the argument of McManus (2012). McManus (2012) argued that city rankings and indexes should be used as a supporting tool, rather than be seen as an end objective. This study underscores that the HCI is used as a supporting tool rather than an end objective. This is also supported by the finding that municipal experts emphasised that municipalities respond to the needs of their residents, and society, rather than focusing on high performance on city rankings or indexes. Nevertheless, as discussed above, the results did imply a greater significance to the performance on a city ranking or index than explicitly acknowledged by the municipal experts.

Complementary to the discussed findings above, this study also implies that perspectives toward performance on city rankings and indexes differ based on job position. This study revealed that the performance of a municipality on the HCI raised questions by municipal council members and received significant attention in the media. Simultaneously, the municipal experts, of whom most were policy advisors, highlighted that performance on the HCI is not the most important. This discrepancy implies that job position influences the perceived importance of performance on a city ranking or index. Moreover, it also shows the various roles that city rankings and indexes serve, for instance, a tool for political engagement, support in policy advice, and news bulletin. Therefore, further research is needed to determine whether there are differences in perspectives toward performance on city rankings and indexes and their purpose based on different job positions.

In short conclusion, concerning the performance on the HCI, this study found contradictory findings. While municipal experts indicated that performance on the HCI was not as important, certain findings suggest otherwise, such as the relativisation of performance and questions raised by municipal councils. These contradictory insights require a deeper analysis of the underlying dynamics that shape a municipal expert's perspective toward the performance on city rankings and indexes.

5.1.2 City rankings and indexes

This section discusses the results regarding the perceived limitations and potentials, the attitudes, and the highlighted points of improvement.

5.1.2.1 Perceived limitations and potentials

The results offer insights into various perceived limitations and potentials of city rankings and indexes, specifically the HCI. In section 4.3.1, the perceived limitations and potentials were discussed elaborately.

The results revealed that municipal experts strongly emphasised the added value of the HCI as a strategic steering tool when considering its perceived limitations and potentials. The perceived limitations and potentials focus on the specific and detailed elaboration of the index's results rather than the methodological approach. Although municipal experts did criticise the HCI's methodological approach, these were only limited. The limitations that focused on the methodology were the equal weighting of characteristics, the neglect of local contexts, and the focus on municipal borders. The limited critiques regarding the methodological approach could be attributed to the assessed characteristics and the data units stemming from well-known and reputable (research) organisations such as the RIVM, CBS and CROW. Also, the initiator of the HCI, Arcadis, is a well-established private company known for its global projects.

In light of the ongoing academic debate on the limitations and potentials of city rankings and indexes, this study shows some alignment with prior research regarding the specific content of the limitations and potentials. While not the objective of this study to compare, it is worth noting some of the parallels with prior research. For instance, a perceived limitation of the HCI was creating unwanted obligations, which reflects the criticism found in prior research that there are hidden costs to being benchmarked (Francis & Holloway, 2007; Moriarty & Smallman, 2009; Scott, 2011). Similarly, the lack of clear purpose of the HCI, another perceived limitation, reflects the critique in prior research of unclear purposes of city rankings and indexes (Acuto et al., 2021; Leff & Petersen, 2015; Sáez et al., 2020). Furthermore, the perceived limitation of neglecting local contexts aligns with the limitation identified in prior research that city rankings and indexes tend to decontextualise municipalities by viewing them as a single system instead of part of a larger ecosystem (Acuto et al., 2021; Giffinger et al., 2010; Jain & Hamel, 2022; Kitchin et al., 2015; Sáez et al., 2020). These limitations raise questions about the fairness of city rankings and indexes concerning the starting conditions of ranked municipalities. Consequently, it raises questions about the purpose of a city ranking or index and whether using them as a strategic steering tool is suitable.

The identified perceived potentials also show strong parallels with prior research. For instance, the perceived potential of stimulation of inter-municipality learning was also found in prior research (Acuto et al., 2021; Giffinger et al., 2010; Jain & Hamel, 2022; Meijering et al., 2014; Portugal, 2019). Furthermore, the perceived potential of reaffirmation and evidence of existing problems, and stimulus to improve the urban environment, align with the potentials found in prior research that city rankings and indexes can guide management of the urban area and positively names and shames municipalities (Acuto et al., 2021; Akande et al., 2019; Giffinger et al., 2010; Kitchin et al., 2015; Leff & Petersen, 2015; Luque-Martínez & Muñoz-Leiva, 2005; McManus, 2012; Meijering et al., 2014; Portugal, 2019; Sáez et al., 2020). Moreover, the perceived potential of making a complex topic insightful and communicable directly aligns with the potential identified in prior research that city rankings and indexes can communicate complex phenomena in an easy and understandable way (Jain & Hamel, 2022; McManus, 2012).

More generally, the perceived limitations and potentials are based on subjective perceptions of city rankings and indexes, which was also deducted from the limitations and potentials found in prior research. Additionally, the findings of this study reflect the finding in prior research that city rankings and indexes are generally more criticised than praised, as there were mentioned more limitations than potentials. This finding implies that the current state of city rankings and indexes, specifically the HCI, is insufficient to effectively guide municipal experts in the planning of healthy cities.

Although the findings of this study show parallels with prior research regarding the content of the limitations and potentials, this study also introduces new perspectives to the current academic debate.

While in prior studies of the limitations and potentials, the limitations primarily focus on the methods of city rankings and indexes, and the potentials primarily focus on the practical use of city rankings and

indexes, this pattern does not hold in the current study. Both the perceived limitations and potentials focused on a more specific elaboration of the results rather than criticising the methodological approach of the HCI. As a result, this study uncovers additional limitations and potentials of city rankings and indexes. For the perceived limitations, for example, the lack of an integral overview of the ranking attribute, the lack of showing concrete interventions that can be implemented to improve the urban environment, the distorted view of reality, the impression that more is better, the lacking variety of levels of research, and the critique that a private company published the index, were not identified in prior research. These perceived limitations highlight the significance municipal experts place on the elaboration of results of a city ranking or index. Likewise, new potentials emerged from this study. For instance, the perceived potential that the initiator gained competitive advantage for future tenders of municipalities based on the applied knowledge in the index.

Consequently, this study's results add to the ongoing academic debates based on these newly found limitations and potentials of city rankings and indexes as follows.

Firstly, the findings of this study suggest that varied societal groups place different emphasis on the limitations and potentials of city rankings and indexes. While prior research focused on scholars critiquing the methodological approaches (e.g., Akande et al., 2019; Acuto et al., 2021; Giffinger et al., 2010; Jain & Hamel, 2022; Kitchin et al., 2015; Meijering, 2014; Sáez et al., 2020), this study focused on municipal experts, who mainly criticise the practical use of city rankings and indexes. As a result, this study adds a layer of complexity to the current academic debate in identifying limitations and potentials of city rankings and indexes; it reveals perspectives on the limitations and potentials vary across societal groups. This variation could be attributed to the varied purposes the city rankings and indexes serve to societal groups (Jain & Hamel, 2022; Sáez et al., 2020).

Secondly, the results also suggest that limitations and potentials are not only influenced by societal groups but are also specific to a city ranking or index. This can be related to the finding in prior research that city rankings and indexes vary greatly in, among other things, method, purpose, results presentation, sample size, scope, and regularity (Acuto et al., 2021; Giffinger et al., 2010; Leff & Petersen, 2015; Meijering et al., 2014; Portugal, 2019). Therefore, the results of any study researching a city ranking or index should be interpreted with caution. The perceived limitations and potentials are likely limited to the specific research case and cannot be extrapolated to other cases. Nevertheless, the findings highlight the need to extend research on identifying the limitations and potentials of city rankings and indexes. Consequently, further studies are recommended to develop a comprehensive overview of the diverse limitations and potentials of city rankings and indexes.

5.1.2.2 Attitudes

This study revealed varying attitudes toward the HCI among municipal experts. While some expressed a negative attitude toward the HCI and focused on limitations, others expressed a positive attitude and focused on the potentials. However, no apparent difference in attitudes based on a municipality's performance on the HCI was identified. Attitudes were rather shaped by subjective perceptions of city rankings and indexes in general. More generally, the results showed that attitudes were mainly based on the perceived added value of using city rankings and indexes as strategic steering tools and were influenced by circumstantial factors. The circumstantial factors identified were: (1) engagement with other topics and tasks (time constraints) within a municipality, (2) amount of (political) attention given to the index, (3) current adoption and use of other city rankings or indexes, (4) alignment of the index's data with existing municipal data, (5) availability of employees to facilitate a thorough analysis of the index (capacity constraints), and (6) organisational culture. These factors negatively influenced attitudes due to limiting engagement with and knowledge of

the index. This resulted in a decreased perceived added value of the index as a strategic steering tool. Linking these findings to the ongoing academic debates, the following insights emerge.

Firstly, this study did not find apparent differences in attitudes toward city rankings and indexes based on performance on the index and effort to change behaviour, as was suggested in the framework by Knutsson et al. (2012). This contradictory finding could arise from the nationwide urgency of the health topic in the Netherlands, such that all municipalities are putting equal effort in enhancing practices regarding health, such that no significant differences in effort to change behaviour related to the level of performance on the HCI could be identified. An alternative explanation for this contradictory finding is that the HCI is one among many available information resources and its infrequent use. This suggests that attitudes toward the HCI were based on initial impressions of the index rather than well-founded analyses. Another possible explanation is the unsuitableness of assessing attitudes toward city rankings and indexes using the framework of Knutsson et al. (2012). Consequently, this study adds complexity to identifying attitudes toward city rankings and indexes; attitudes may be more influenced by circumstantial factors than performance on an index and effort to change behaviour. This implies that attitudes toward city rankings and indexes are more difficult to typify and categorise than initially came forward from prior research. Therefore, further research is needed to further explore the categorisation of attitudes toward city rankings and indexes.

Secondly, this study underscores the need to elaborate on prior research, as there are more factors through which attitudes are influenced. Prior research suggested attitudes are based on performance on an index, effort to change behaviour (Knutsson et al., 2012), and perceived use (Kitchin et al., 2015). While the results of this study somewhat reflected that attitudes are based on perceived use, it mainly highlights that attitudes were profoundly based on subjective perceptions and circumstantial factors. Consequently, this study expands on the factors influencing attitudes beyond the frameworks established in prior research. Future research could extend existing frameworks, such as the one by Knutsson et al. (2012), using the circumstantial factors found in this study to demonstrate the influence of a wider variety of factors on attitudes toward city rankings and indexes.

Thirdly, the findings of this study imply that the distinction argued by Kitchin et al. (2015) may not universally hold true. Kitchin et al. (2015) distinguished between municipalities using city rankings and indexes as contextual background knowledge and municipalities using city rankings and indexes as evidence for urban management. The current study showed that the HCI is not actively used as a strategic steering tool. Consequently, the interviewed municipalities align with the former category, affirming one aspect of the distinction made by Kitchin et al. (2015). However, the latter aspect, municipalities using city rankings and indexes as evidence for urban management, was not identified in this study.

Lastly, this study raises questions concerning the current academic debate on the relevance of attitudes toward city rankings and indexes on their perceived added value. The results of this study suggest that other factors play a more significant role in the perceived added value of city rankings and indexes. This is inferred from the findings of this study which showed that HCI is not used as a strategic steering tool, there was no apparent difference in attitudes toward city rankings and indexes based on performance on the index and effort to change behaviour, and circumstantial factors seemingly have more significant influence. This observation could be attributed to the limited impact of attitudes on the perceived added value of city rankings and index, which results in it not being identified, or the context-specificness of HCI. Further research is recommended to further clarify this observation.

5.1.2.3 Recommendations to improve city rankings and indexes

The results of this study highlighted various ways in which city rankings and indexes, specifically the HCI, could be improved. In section 4.3.3, the points of improvement were discussed elaborately. A deeper analysis of the points of improvement revealed that they strongly focus on enhancing the HCI's, or any other city ranking's or index's, perceived added value as a strategic steering tool. Most of the points of improvement focus on a more concrete, clearer, and specific elaboration of the results. Examples of such points of improvement are: (1) acknowledging local conditions, (2) integrating cultural, social, and economic characteristics for a more integral overview, (3) providing a set of (example) interventions and best practices, (4) showing the (composite) index values, and (5) providing a contact list. Consequently, the findings suggest that a city ranking's or index's usefulness for municipalities can be enhanced by more precisely elaborating on the results and providing an actionable framework, rather than by revising the methodological approaches used.

While prior research suggests methodological enhancements are the primary points of improvement, this study found a different emphasis. The focus on improving a city ranking or index centres on enhancing its usefulness as a strategic steering tool for, in the current study, the planning of healthy cities. This finding does not align with the existing academic debates on improving city rankings and indexes, thus, sheds new light on the existing academic debates. It suggests that the different purposes city rankings and indexes serve to distinct societal groups translate to different priorities concerning their improvement. Although prior research also indicated that city rankings or indexes have varied purposes (Jain & Hamel, 2022; Sáez et al., 2020), this study extends the academic debate by highlighting that the varied purposes also reflect different priorities. Accordingly, this aligns with the earlier discussed implications of this result that societal groups place different emphases on the limitations and potentials of city rankings and indexes. Consequently, scholars may prioritise a rigorous methodological approach, while policy advisors prioritise the outcomes of city rankings and indexes to inform actionable interventions. This distinction could be attributed to the varied purposes for which the city rankings and indexes are used; scholars may use them as research data, while policy advisors may use them for practical guidance to planning. Another explanation could be that the municipal experts underestimated the role of the method in improving city rankings' or indexes' usefulness. Nevertheless, these findings support the prior discussed new insight that job positions seemingly influence the perspectives toward city rankings and indexes.

Moreover, by aligning the points of improvement with the purposes of the HCI, it becomes evident that municipal experts expect Arcadis to offer greater guidance for planning healthy cities via the HCI. While one of the purposes of the HCI is to identify what areas municipalities could improve, the points of improvement revealed that municipal experts expressed a desire for more specific insights. Similarly, another purpose of the HCI was to enforce inter-municipality learning. However, the results of the current study suggested limited influence of the HCI in enforcing municipalities to contact other municipalities. Consequently, the point of improvement to provide a contact list to guide inter-municipal contact and learning based on the HCI is unsurprising.

Although it is not the objective of this study to explore whether the purposes of the HCI are fulfilled, the findings imply that the HCI's purposes may be too broad to guide the planning of healthy cities for municipalities effectively. This leads to the points of improvement mentioned by municipal experts to enhance the HCI's usefulness. However, it should also be noted that the results also indicate that initiators of city rankings and indexes need to maintain a clear focus on their intended character and purpose when improving. Accordingly, the results imply that a city ranking's or index's purpose needs to be highlighted clearer to avoid diverse points of improvement are expressed; points of improvement that could undermine the city ranking's or index's initial character and purpose. Given that one of the limitations was the unclear

purpose of the HCI, it is highly likely that this was the case in the current study. Therefore, additional research is recommended to highlight specific points of improvement for the HCI.

Nonetheless, linking the points of improvement to the perceived limitations, this study implies that enhancing city rankings and indexes can be achieved through addressing the limitations of city rankings and indexes. This is unsurprising, given that these limitations impact the (practical) usefulness of a city ranking or index.

Another insight regarding the improvement of city rankings and indexes that emerged from the results is as follows. The municipal experts expressed the potential of the HCI as a strategic steering tool but criticised its current limited usefulness as such as tool. Consequently, it is notable that there was no contact with Arcadis to give back criticisms toward the HCI that could enhance the value of the HCI as a strategic steering tool. Municipalities do not appear to make significant efforts toward ensuring improvements. These findings suggest that city rankings and indexes are not of great importance to municipalities as a strategic steering tool. Consequently, to encourage the more frequent use of the HCI as a strategic steering tool for planning healthy cities, the responsibility of identifying points of improvement lies with the initiator, Arcadis. This raises questions about the added value of city rankings and indexes in planning healthy cities for municipalities.

All in all, the above-discussed insights of this study's results provide new perspectives to the limited knowledge available in academic literature surrounding what points of improvement can enhance city rankings and indexes and how these points of improvement can come to light.

5.1.3 City benchmarking: Inter-municipal competition

Concerning inter-municipal competition regarding the HCI, the following became evident from the results.

When explicitly questioned about inter-municipal competition regarding the HCI, the municipal experts indicated that they did not perceive it was present. However, the inter-municipal competition regarding the HCI did emerge to a limited extent in other study findings. The inter-municipal competition could be identified in the following two findings.

Firstly, performances on the HCI were often relativised based on local contexts. Consequently, the positions of municipalities on the HCI were undermined. This suggests that municipal experts were more competitive than they acknowledged and, in most cases, desired a higher ranking for their municipality in relation to other municipalities on the index without explicitly stating it.

Secondly, performances on the HCI resulted in questions raised by municipal councils. This indicates the presence of inter-municipal competition on a political level. Accordingly, while the municipal experts did not perceive inter-municipal competition present in their municipality, the study findings suggest otherwise. Although the HCI was not intentionally used as a competitive steering tool, the findings show that it contributed to a limited feeling of competition among municipalities, despite not being directly acknowledged by the municipal experts. These findings imply that the competitive nature concerning city rankings and indexes is more implicitly and subconsciously than explicitly experienced.

Furthermore, in light of the current academic debate on the competition aspect of city rankings and indexes, this study provides new insights and aligns with prior research.

Firstly, while prior studies strongly criticised the competitive nature of city rankings and indexes (Acuto et al., 2021; Francis & Holloway, 2007; McManus, 2012; Moriarty & Smallman, 2009 and White & Kitchin, 2021), this study found only limited critique. Municipal experts generally discouraged using city rankings and indexes as competitive tools. This inconsistency in findings could be attributed to the municipal experts

not explicitly perceiving or acknowledging inter-municipal competition. Another explanation is the purpose the city ranking or index serves for the specific municipal experts. For policy advisors, it might have a more supporting purpose, while for municipal councils, it might be more used as a political tool and have a more competitive purpose. Nevertheless, the limited critique identified in this study for inter-municipal competition concerning the HCI, suggests that the competitive nature of city rankings and indexes is less pronounced than suggested in prior research. However, it should also be noted that this inconsistency reflects different societal groups emphasis the nature and practical uses of city rankings and indexes differently. The current study focused on municipal experts, and in prior research most criticisms were expressed by scholars. This implies different societal groups have different perspectives on city rankings and indexes. This observation, as previously discussed, could arise from the varied purposes of the city rankings and indexes (Jain & Hamel, 2022; Sáez et al., 2020). However, future research is necessary to explore this issue in greater depth.

Secondly, this study revealed that municipal experts expressed interest in highlighting how municipalities perform against their own policies and ambitions rather than against other municipalities. Although the motivations behind this remain inconclusive from this study, it could come from a desire to avoid inter-municipal competition. Nevertheless, this finding aligns with prior research arguing that it would be more appropriate to benchmark against municipalities' own policies and targets (White & Kitchin, 2021). However, whether such benchmarking is practised remains unclear from the current study, and the societal need to compare municipalities seems to outweigh the need to benchmark a municipalities' own policies and targets, especially considering the growing development of city rankings and indexes.

Thirdly, consistent with prior studies (e.g., Acuto et al., 2021; Giffinger et al., 2010; Jain & Hamel, 2022; Meijering et al., 2014; Portugal, 2019), this study showed that city rankings and indexes should be enhanced to be used for inter-city learning and collaboration rather than competition regarding high performance. This could be seen as a form of 'healthy competition', where municipalities share information and knowledge to improve and enhance practices. Accordingly, healthy inter-municipal competition focuses on enhancing the practices of a municipality instead of achieving a higher rank in a city ranking or index. Despite the inter-municipal competition identified as being present, these findings suggest that the HCI is more often perceived as stimulating innovation rather than enforcing competition in terms of higher performance. However, the extent to which the HCI stimulates healthy competition remains inconclusive based on the results of the current study and needs to be explored in future research.

5.1.4 Planning of healthy cities using city rankings and indexes: Evidence and data

The results showed that the HCI is not actively used as a strategic steering tool. Nonetheless, the municipal experts expressed potential in using city rankings' and indexes' indicators' data as evidence to identify problems, tasks, and potential solutions. This finding is hardly unexpected in light of the current academic debates on using evidence and data in planning. The current academic debates highlight that data is often used to justify certain policy interventions are needed and are (cost-)effective (Bowen & Zwi, 2005; Erkkilä & Piironen, 2018). Consequently, the finding of potential in city rankings' and indexes' indicators' data is unsurprising, given the broader motivations to use data in planning.

Drawing this parallel to prior research, based on the findings of this study, it is evident that city rankings and indexes serve as a foundation for evidence-based and data-driven planning, as they consist of evidence and data. The current study has, however, been unable to demonstrate to what degree the HCI's indicators' data is aligned to and used in planning processes and policies. As the HCI is not actively used as a strategic steering tool, this suggests that the alignment of policies or planning processes to the HCI's indicators' data is subconscious and could be attributed to the data used as public data originating from reputable organisations, such as the CBS or CROW. Additionally, the role of the indicators of the HCI is speculative

and can be hypothesised to be limited to non-existent. While the HCI was said to guide a more data-driven and evidence-based approach to designing a (healthy) urban environment, its influence on data-driven and evidence-based approaches within municipalities remains unclear due to the HCI not actively being used as a strategic steering tool. Municipalities instead use their conventional resources, which already align with current work processes. Therefore, future research is recommended to explore this topic further. Additional research is needed to better understand whether data units used in city rankings and indexes are also frequently used in policies, which could be achieved through content analysis.

Nevertheless, the results showed a growing emphasis on data-driven planning, which aligns with the highlighted potential of data in planning in prior research. The current study observed a shift toward more data-driven approaches in the planning of cities, a shift that was encouraged in prior research (Brown & Corry, 2011, 2020; Lak & Aghamolaei, 2022; Stoltz & Grahn, 2021). This shift suggests the added value of using data in planning processes.

However, this study also brought new insights. The current study found a strong encouragement to balance data-driven planning and subjective perception-based planning. While prior research focused on the great potential of data-driven planning, the municipal experts also emphasised the disadvantages of such approaches. For instance, the inability to capture subjective perceptions and long-standing traditions, which, as implied by the results, are essential in the planning of healthy cities.

In adopting a broader perspective regarding the use of city rankings and indexes in the planning of healthy cities, the results of this study imply that their current use is limited to showing a topic's urgency and identifying problems, tasks and potential solutions. This outcome is hardly unexpected considering the challenges of planning healthy cities identified. City rankings and indexes do not directly address the challenges of planning healthy cities. The challenges identified were focused on organisational structures and constraints. Although city rankings and indexes cannot directly address organisational structures and constraints such as limited capacity and budgetary constraints, they may serve a supporting role. For instance, the data from city rankings and indexes could guide the identification of interests that need prioritisation within the limited space available and the allocation of limited budgetary resources. Consequently, in light of these findings, questions arise regarding the effectiveness and usefulness of city rankings and indexes in the planning of healthy cities.

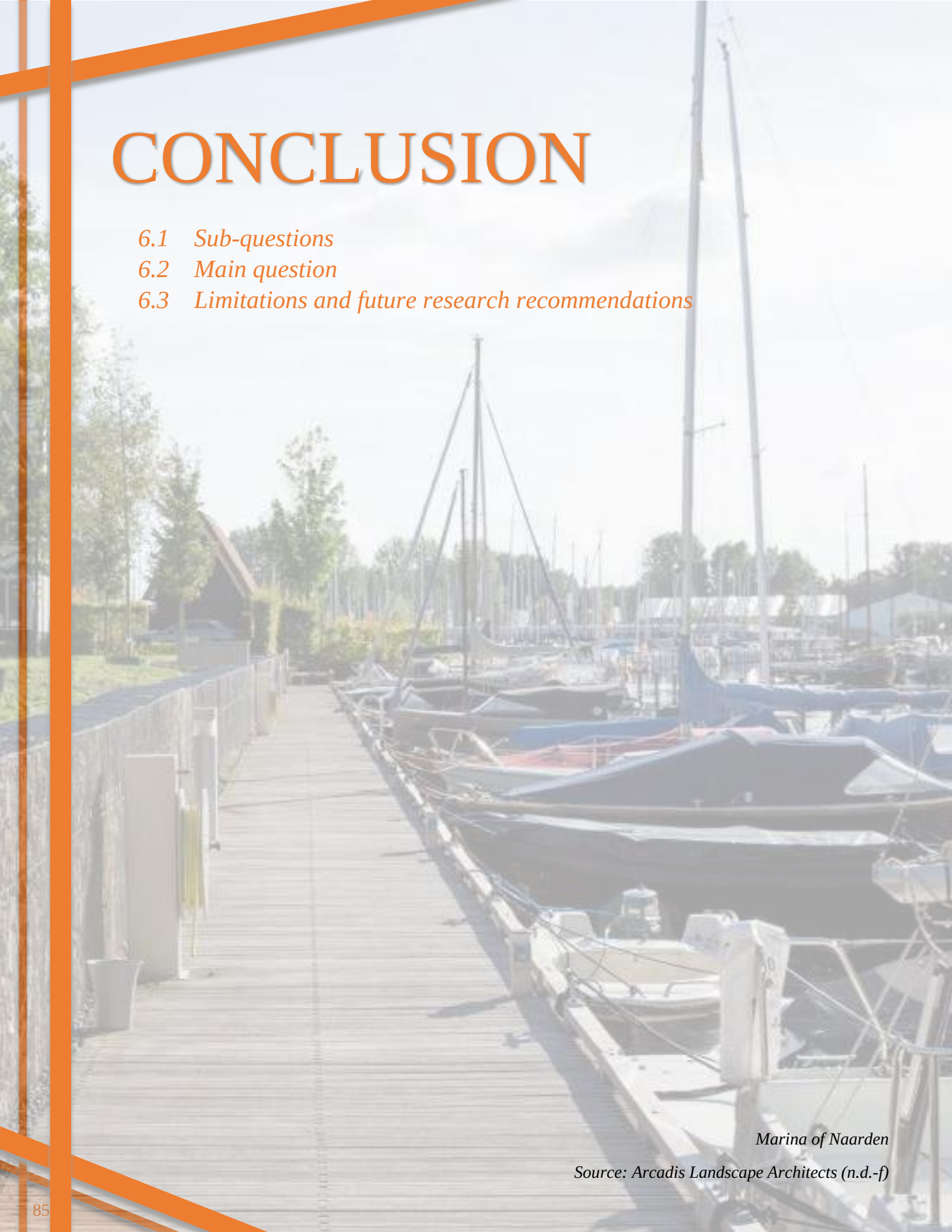
To briefly summarise the discussion of the findings of this study in light of the conceptual framework, this study showed that circumstantial factors significantly influence the use of city rankings and indexes in the planning of healthy cities. It showed that attitudes, performance on a city ranking or index, the importance of the ranking attribute in the municipality, and the perceived limitations and potentials have limited impact on the use of a city ranking or index. Consequently, while most findings align with ongoing academic debates, this study also revealed contradictory results and brought forward new insights, creating opportunities for future research.

5.2 Practical implications

This study also has certain practical implications. Firstly, this study identified points of improvement for future city rankings and indexes. The points of improvement can guide initiators of city rankings and indexes in enhancing the effectiveness of their city ranking or index. Also, using the points of improvement, the city ranking or index can be aligned to the desires of what the specific city ranking or index needs to entail to fulfil a broader purpose. Secondly, being among the first studies that intend to find out the impact of city rankings and indexes on the planning of healthy cities, this study proves useful as a guideline for future research. Based on the current study, future research could enhance the understanding of the impact of city rankings and indexes in other empirical settings. Since city rankings and indexes are widely published, it is

important to keep studying them and inform a wider public of their impact. Lastly, this study focuses on an increasingly important societal topic, improving the health of cities and their residents. The study provides insight for municipalities into how a certain tool, city rankings and indexes, impacts the planning of healthy cities. Consequently, it potentially guides municipalities in using city rankings or indexes to plan a healthy city while remaining critical of the flaws of city rankings and indexes. Through a detailed analysis, city rankings and indexes can, for example, demonstrate a municipality's strengths and weaknesses, help contact peer cities that apply learnful practices, and show the topic's urgency to the whole municipality. Summarising, this study potentially promotes change in the urban environment based on the use of city rankings and indexes to address an increasingly important societal topic.

CONCLUSION



Marina of Naarden

Source: Arcadis Landscape Architects (n.d.-f)

6 Conclusion

This study aimed to explain the impact of city rankings and indexes on the planning of healthy cities. The study was conducted using a qualitative method with a case study approach. The case study was the Healthy City Index (HCI) by Arcadis. I interviewed 24 experts, including 22 municipal experts, a healthy city expert, and an expert from Arcadis, the initiator of the index. Through an analysis of the results of these interviews and the report of the HCI, the research questions can be answered. Consequently, in this chapter, I answer the research questions. First, I answer the sub-questions. After that, I answer the main research question. At the end of this chapter, I reflect on the research limitations and make recommendations for future research.

6.1 Sub-questions

I used three sub-questions as a framework to answer the main research question. In the following sections, I answer the sub-questions. Before each sub-question is answered, the sub-question is repeated first.

6.1.1 Sub-question 1: Limitations and potentials

The first sub-question was: *'What are the perceived limitations and potentials of using city rankings and indexes as a reference for planning healthy cities'.*

Below, in Table 9, the perceived limitations and potentials are summarised. In section 4.3.1, the perceived limitations and potentials were discussed elaborately. Several conclusions can be drawn based on analysing these perceived limitations and potentials.

Table 9 Perceived limitations and potentials in conclusion

Limitation	Potential
One-sided view of factors determining health due to focus on the physical environment	Reaffirmation and evidence of existing (and urgent) problems
Incomplete/ distorted view of reality	Stimulation of inter-municipality learning and collaboration
Neglect of local contexts	Stimulus to improve the urban environment
Equal weighting of assessed characteristics	Making a complex topic insightful and communicable
Private company (Arcadis) conducting the research	Focus and attention given to the topic
No display of the (composite) index values	Conducting interviews prior to the publication of the index
Focus on municipal borders	Arcadis as attractive party for future tenders
Tension between being supportive and creating obligations	Marketing of the municipality
Lack of showing concrete interventions	
Lacking variety of levels of research	
Impression that more is better	
Lack of clarity about the purpose	

Firstly, the limitations of the HCI, and city rankings and indexes in general, are highlighted more than the potentials. This can be attributed to most of the limitations being specific to the HCI, while the potentials apply more broadly to city rankings and indexes.

Secondly, the limitations and potentials focus on the index's added value as a strategic steering tool for planning healthy cities. Some limitations focus on the methodology applied in the HCI, such as the equal weighting of characteristics, the neglect of local contexts, and the focus on municipal borders. However,

significant emphasis lies on the perceived added value of city rankings and indexes as a strategic steering tool to plan healthy cities. This significant emphasis on the perceived added value can be attributed to the purpose city rankings and indexes could serve municipalities.

Thirdly, the potentials extend beyond municipalities' use of the index as a strategic steering tool to plan healthy cities. The index has significant added value for the initiator, Arcadis. With the index, Arcadis receives wide attention in the media and within municipalities. Consequently, Arcadis gained a unique selling point and competitive market advantages.

Fourthly, an integral perspective of the ranking attribute in city rankings and indexes is important, as indicated by the most frequently mentioned limitations. The most frequently mentioned limitations were the equal weighting of characteristics, negligence of local context, and the one-sided view of factors determining healthy by focusing on the physical environment.

Lastly, considering the most frequently mentioned potentials, currently, the most added value of the HCI, and city rankings and indexes in general, lies in raising awareness and stimulating improvement. The most frequently mentioned potentials are the attention given to a particular topic, reaffirmation of existing problems, and, consequently, evidence and stimulus to improve certain characteristics.

6.1.2 Sub-question 2: Indicators

The second sub-question was: *'What is the role of indicators in planning healthy cities and how do they influence (healthy) transformations of the urban environment'*.

There is a growing emphasis on using indicators and their data in municipal tasks. Consequently, planning processes are becoming more data driven. This growing emphasis can be attributed to societal trends, such as digitalisation and the increased demand for transparency. However, it remains inconclusive whether the emerging appearance of city rankings and indexes also reinforces the use of indicators in planning.

Indicators play an important role in the planning of healthy cities as they serve as a starting point for formulating tasks, identifying problems, and showing the severity of problems within a municipality. As a result, indicators make problems insightful and communicable. Furthermore, indicators guide the monitoring and evaluation of progress. However, intuition, tradition, and beliefs also still play an essential role in the planning of healthy cities. Indicators cannot always capture data stemming from subjective perceptions of a place, intuition, and tradition. Consequently, balancing quantitative and qualitative data to guide the planning of healthy cities is essential.

The following additional conclusions regarding the role of city rankings' and indexes' indicators in planning healthy cities can be drawn. City rankings and indexes, consisting of indicators, serve as a foundation for data-driven urban planning. Specifically, the HCI was said to guide a more data-driven and evidence-based approach to designing a (healthy) urban environment. However, it remains uncertain whether the indicators of the HCI actively guide data-driven and evidence-based approaches within municipalities, as the HCI was not actively used as a strategic steering tool. The potential role of the HCI's indicators in planning healthy cities currently relies on speculations. Consequently, the alignment to HCI's indicators is mostly subconscious.

Furthermore, the potential role of the HCI's indicators in planning healthy cities currently relies on speculations. Nevertheless, based on the speculations, it showed the following. The extent to which a city ranking's or index's indicators play a significant role in municipalities is influenced by several factors. Firstly, the level of detail of the indicators plays a crucial role. The more detailed the indicators' data, the greater their potential significant role. An indicator consisting of detailed data provides concrete and usable

information. Secondly, the role of a specific indicator depends on its perceived added value to current work processes. City rankings' and indexes' indicators are among the many available information resources for municipalities. Consequently, there is often not resided to city rankings' or indexes' indicators for data. Instead, municipalities use conventional resources which already align with current work processes. Thirdly, the organisational culture plays a crucial role in increasing the awareness of the added value of using data and certain indicators in municipal processes. Lastly, the size of the municipality influences the role indicators play in the planning of healthy cities. Larger municipalities tend to use more data as they have more data available than smaller municipalities.

In conclusion, indicators are increasingly playing a role in the planning of healthy cities. Indicators influence the transformations of the urban environment by providing starting points for formulating tasks, identifying problems, and potential solutions. Though, the data-driven planning of healthy cities needs to be complemented and balanced with a more intuitive and traditional approach to planning. Moreover, the influence of the HCI's indicators on planning healthy cities remains uncertain. The potential role of the HCI's indicators in planning healthy cities currently relies on speculations. Consequently, the alignment to HCI's indicators is mostly subconscious.

6.1.3 Sub-question 3: Improvements

The third and final sub-question was: *'How can city rankings and indexes be improved to serve as strategic steering tools for planning healthy cities'*.

Generally, city rankings and indexes are currently rarely used as strategic steering tools for planning. This is also the case for the HCI, which is not actively used as a strategic steering tool for planning healthy cities. Currently, the HCI causes a temporarily increase in the importance of the assessed topic in a municipality due to media coverage and municipal councils asking questions about a municipality's performance on the index. However, this impact of the index diminishes over time. Shortly after the index's publication, the index is often put aside in an imaginary drawer, and the standard and ongoing municipal duties are resumed. Consequently, while city rankings and indexes could generally be used to formulate tasks, it remains inconclusive whether this is the case for the HCI.

The rare use of the HCI, and city rankings and indexes in general, as strategic steering tools can be attributed to the wide availability of city rankings and indexes, current limitations, and circumstantial factors. Firstly, the wide availability of city rankings and indexes decreases the perceived added value of a single city ranking or index as a strategic steering tool per se. Secondly, the current limitations of the HCI, and a city ranking or index in general, limits its use as a strategic steering tool. Specifically, the level of research (municipality-level) does not correspond to the neighbourhood approaches taken by municipalities. Furthermore, the limitations concerning the lack of showing concrete interventions and neglect of local contexts complicate the use of the HCI as a strategic steering tool. Accordingly, the HCI is currently not specific enough for municipalities to be used as a strategic steering tool. A deeper analysis is required if municipalities want to use the HCI as strategic steering tool. This requires time and capacity that is often not available in municipalities. This relates to the third point that causes the rare use of the HCI as strategic steering tool: the circumstantial factors. The circumstantial factors include time constraints, (limited) attention given to the index, the current use of other city rankings or indexes, the alignment of the index with current work processes, capacity constraints, and organisational culture. Using city rankings and indexes as strategic steering tools largely depends on top-down encouragement.

Despite the current limited use of the HCI as a strategic steering tool for planning healthy cities, the HCI, and city rankings in general, are appreciated. City rankings are valuable tools for comparing municipalities on an urgent topic using a standardised method. Though, to enhance their value as strategic steering tools

for planning healthy cities, they need to be improved. In section 4.3.3, the points of improvement were discussed elaborately. The points of improvement are summarised below.

- Include rural areas in city rankings and indexes, not solely larger cities (the 'usual suspects');
- Consider the local conditions faced by the ranked cities /municipalities;
- Include cultural, social, and economic characteristics to provide a more integral overview;
- Assign a weight to characteristics according to their strength and importance to the ranking attribute;
- Include different research levels and distinguishments, such as municipalities, provinces, and Western–Northern municipalities /cities;
- Include a set of (example) interventions that could be implemented to improve the urban environment;
- Align the time needed to see changes in the urban environment with the time between new editions of the city ranking or index;
- Include international peer cities;
- Show the (composite) index values to indicate the magnitude of the differences;
- Indicate the characteristics where the most gains can be made;
- Facilitate the city ranking or index as a digital (continuous) monitor so that municipalities can prioritise characteristics themselves;
- Conduct a short survey after the publication of a city ranking or index to gather feedback on the index, such that it can be improved for the new edition;
- Include an inhabitant perspective to capture how a city is lived in and felt about/ perceived;
- Include a list of contact persons per municipality to enforce and facilitate inter-municipality learning and collaboration;
- Showcase best practices of municipalities with the highest score in each of the different domains (if categories are present in the city ranking or index);
- Offer free advice to the municipalities ranked the lowest in a city ranking or index.

The degree to which these points of improvement are easy to incorporate a city ranking or index differs. Some points of improvement are straightforward and easy to incorporate, such as including (composite) index values and including a contact list. However, some points of improvement are more complex, such as considering local contexts and assigning weights to characteristics. While the former points of improvement can be incorporated using a simple mention in the report of the index, there are no conclusive answers how to incorporate the latter points of improvement. Additionally, not all points of improvement might be appropriate to incorporate in a specific city ranking or index. Specifically, for the HCI, this concerns including cultural, social, and economic characteristics and the consideration of local contexts. These points of improvement would presumably go beyond the scope of the HCI. Consequently, city rankings and indexes need to be improved cautiously, maintaining a clear focus on their intended character and purpose.

Nevertheless, the conclusion can be drawn that the points of improvement primarily concern the enhancement of the elaboration of the index's results rather than profound changes to the methodology. Consequently, the results of the index need to provide more concrete and specific guidance to planning healthy cities to be used as a strategic steering tool.

In short, city rankings and indexes are currently rarely used as strategic steering tools for planning due to their wide availability, current limitations, and circumstantial factors. This is also the case for the HCI, which is not actively used as a strategic steering tool for planning healthy cities. Considering the satisfaction with the existence of city rankings and indexes, specifically the HCI, they can potentially be used strategic tools in the future. However, to be used as an effective strategic steering tool, they need to be improved, mainly concerning enhancing the presentation of concrete and useable index results.

6.2 Main question

Using the sub-questions and the discussion of the findings, the main research questions can be answered. The main research question was: *'How do city rankings and indexes impact the planning of healthy cities'*.

The study specifically focused on the impact of the HCI on the planning of healthy cities. The HCI has limited impact on the planning of healthy cities. This conclusion is derived from the following key findings.

Firstly, the HCI does not directly address the main challenges of planning healthy cities. The main challenges of planning healthy cities are focused on organisational structures. While the HCI's results can support addressing the challenges arising from organisational structures, such as guiding the allocation of limited budgetary resources toward interests that need prioritisation, it does not address the challenges at its core. The limited usefulness of the HCI in addressing the main challenges of planning healthy cities at its core limits its overall impact in planning healthy cities.

Secondly, the increased awareness of the health topic due to the HCI is short-lived and diminishes over time. The HCI only temporarily increases awareness of the urgency of the health topic in a municipality through media coverage and municipal councils asking questions about their municipalities' performance on the index. However, shortly after the index's publication, the HCI is often put aside in an imaginary drawer, and the standard and ongoing municipal duties are resumed. This temporarily increase of awareness also indicates the limited impact of the HCI on the planning of healthy cities.

Thirdly, municipalities are not actively and purposefully improving their performance on the HCI. The HCI was instead used as an initial supporting tool to reaffirm existing problems and raise awareness on the health topic. Moreover, municipalities tend to focus more on the final ranking of the HCI than the individual assessments. Furthermore, performing well compared to a municipalities' own goals and ambitions and responding to their residents' needs was identified as more important than performing well on the HCI. Consequently, it can be inferred that municipalities do not actively focus on using the HCI to plan healthy cities. This contributes to the HCI's limited impact on the planning of healthy cities.

Fourthly, the limitations of the HCI, and city rankings and indexes in general, were highlighted more than the potentials. Given that these limitations negatively influence the usefulness of the index, this contributes to the limited impact of the HCI on the planning of healthy cities. Additionally, as the HCI was not actively used as a strategic steering tool for planning healthy cities, the potentials were primarily based on speculations. As both the limitations and potentials focused on the practical use of the index, it can be inferred that the suitableness of the HCI for planning healthy cities is currently limited. Consequently, the HCI has limited impact on the planning of healthy cities.

Lastly, the HCI was not actively used as a strategic steering tool for planning healthy cities. The HCI is one of many available information resources. Municipalities need to decide what information resources to use. Due to their current limited usefulness as a strategic steering tool, city rankings and indexes are often not the primary resource for planning healthy cities. Accordingly, the HCI does, to a large extent, not align with the neighbourhood approaches adopted by municipalities to improve the urban environment. The HCI was identified as lacking specific information necessary for actionable interventions. Moreover, it was found more likely that municipalities shared knowledge and information through already existing networks rather than because of the HCI's results. This underscores the limited impact of the HCI on the planning of healthy cities.

Despite its limited impact, the HCI is generally considered a valuable tool, and its further development is encouraged. The impact of the HCI, and city rankings and indexes in general, on the planning of healthy cities could potentially be increased by addressing the current limitations and implementing the points of

improvement. The impact of a city ranking or index in planning healthy cities significantly depends on the concreteness, clearness and specificity of the elaboration of the results. Addressing these issues potentially enhances its perceived added as a strategic steering tool. However, the responsibility for identifying specific improvements to a city ranking or index lies with the initiator. While municipalities encourage the development of city rankings and indexes, they are not expected to show direct efforts toward communicating the points of improvement for a city ranking or index. It is also noteworthy to mention that initiators can only influence the impact of their city ranking or index to a limited extent, as the impact is also significantly influenced by circumstantial factors within a municipality. Considering all the above, it can be concluded that the HCI, in its current state, serves more as a marketing tool for Arcadis, than it has profound impact on the planning of healthy cities by municipalities.

In conclusion, the HCI has limited impact on the planning of healthy cities. In its current state, the HCI is more a marketing tool for Arcadis than it has a profound impact on the planning of healthy cities by municipalities. The main impact of the HCI currently lies in highlighting the topic's urgency, providing evidence for reaffirming existing problems and formulating tasks, and stimulating inter-municipality learning and collaboration. However, this impact is significantly based on speculations and influenced by circumstantial factors within municipalities. Nevertheless, municipalities encourage the enhancement of the index so that it can be better used as a tool to plan healthy cities more precisely and purposefully, consequently improving a municipality's ranking.

6.3 Limitations and future research recommendations

As with any other study, it is plausible that several limitations influenced the results. It is important to acknowledge these limitations to ensure the results are interpreted with caution. Consequently, I highlight the limitations in this section. I discuss how the limitations potentially influenced the findings and how these limitations can be corrected in future research. I also put forth additional recommendations for future research based on the results. These future research recommendations are additional recommendations to those discussed in the Discussion.

The first limitation that should be acknowledged is the research approach, specifically using a case study approach. As the literature review showed, city rankings and indexes largely deviate in their (methodological) characteristics (Acuto et al., 2021; Giffinger et al., 2010; Leff & Petersen, 2015; Meijering et al., 2014). While using the HCI as a case for this study provided an in-depth understanding in a specific context, most findings are specific to the HCI. Despite not being the main purpose of this study, using a case study approach limited the generalisability of the results (Bryman, 2012; Flyvbjerg, 2006). Future research is necessary to validate the conclusions drawn from this study. Future research could explore further by looking at different city rankings and indexes and assess their impact on the planning of healthy cities or planning in general. Additionally, future research could take a general stance toward the topic and assess how city rankings and indexes, in general, shape municipal practices. For instance, by focusing on one municipality rather than one specific city ranking or index. Using these approaches offers the opportunity to produce more generalisable results.

The second limitation that should be acknowledged concerns the broad selection criteria for the municipal experts. The municipal experts were approached based on two criteria: their employment in a municipality ranked in the HCI and their involvement in (healthy) urban planning or related topics, such as planning in general or area development, focusing on healthy urban transformations. While these broad criteria aimed to capture diverse perspectives on the impact of the HCI in municipalities, it also resulted in interviews with municipal experts who were unfamiliar with the HCI and municipal experts that were less engaged with the research topic than desired. While this provided the insight that there is potential to enhance the impact of the HCI through wider distribution within municipalities, it also complicated the analysis of the interviews.

The reason being that the municipal experts presented a combination of specific and more general perspectives toward city rankings and indexes, which had to be aligned. Consequently, some findings are not specific to the HCI, which may have influenced the current study's findings. Considering this limitation, there is an opportunity for future research to survey more specific municipal experts. Future studies should develop specific criteria for selecting municipal experts to be interviewed. For instance, future studies could focus on one domain of the HCI and interview municipal experts that concern themselves with that domain of a health city. This would provide more precise and meaningful insights into the impact of a city ranking or index for a specific domain within a municipality.

A third limitation of the current study concerns treating municipalities as singular entities. It came forward during the interviews that the responses provided by the interviewed municipal experts were subjective in nature and could depend on their position within the municipality. Considering that the HCI assessed the 25 largest municipalities in the Netherlands, these municipalities employ a considerable amount of people across various departments, with each their own perspective regarding the HCI, or city rankings and indexes in general. Consequently, it is important to note that even within the municipality, there may be different perspectives regarding the HCI. It needs to be mentioned that there was no single perspective for a specific municipality, as a municipality consists of multiple entities (read: employees) with each their own perspective. Consequently, the interviewed municipal experts do not represent the general perspective of a municipality. This may have influenced the findings, as only certain perspectives were discussed. Furthermore, this also affects the reproducibility and replicability of research. Consequently, it is important to conduct future research to explore how perspectives toward a city ranking or index differ based on position within a municipality. Furthermore, the use of quantitative methods, such as questionnaires, could be adopted to capture more perspectives and enhance the reproducibility and replicability of the research.

A fourth limitation that should be acknowledged is the scope of the research topic. This limitation is closely related to the limitation regarding the broad selection criteria for the municipal experts. The literature review reveals many perspectives on what constitutes a healthy city (Boon, 2020; Crane et al., 2021; Riley & De Nazelle, 2019). The findings may have been influenced by focusing on healthy cities generally instead of a specific domain of a healthy city. Consequently, it could be that not all perspectives on a healthy city were captured. Therefore, the analysis of how the HCI impacts the planning of healthy cities could be incomplete. Municipalities could interpret what constitutes a healthy city based on their local context, which might not correspond to the HCI's definition. Therefore, future research is necessary to establish how individual municipalities define a healthy city, to what degree it corresponds to the HCI's definition, and how this affects the HCI's impact on planning a healthy city in that specific municipality. Furthermore, as previously discussed, it could benefit future studies to focus on one domain within a city ranking or index. This helps to approach the right municipal experts, while also demarcating the research scope and offering more precise and meaningful insights into the impact of a city ranking or index for a specific domain within a municipality.

A fifth, and final, limitation that should be acknowledged is the time constraints faced during the interviews. As the municipal experts had limited time available, the interviews generally focused on a limited number of limitations and potentials from the literature review. Although municipal experts could express additional limitations and potentials, this may have influenced the results of this study. Therefore, it is recommended to conduct further research in which more limitations and potentials are discussed and explored with municipal experts.

Given the limitations of this study, several recommendations for future research were put forward. Additional recommendations for future research can be made in light of the findings. Consequently, I propose the following additional future research recommendations.

Firstly, as this study primarily focused on municipalities, there is an opportunity for future research to investigate how other societal groups, such as residents, businesses, provincial employees, and the initiators of city rankings or indexes, are impacted by city rankings and indexes. As mentioned, the HCI provides market advantages for Arcadis. Future research could explore to what extent these market advantages occur and how this influences Arcadis' position in the market. Furthermore, exploring how a city ranking or index influences residents or businesses in their choice of housing or business location and increased participation in planning processes in a municipality is interesting. This could help municipalities use city rankings and indexes to encourage more active planning participation. Overall, exploring the impact of city rankings and indexes on other societal groups could provide valuable insights for society, and the initiators of a specific city ranking or index. This enables the understanding of the broader impact of city rankings and indexes. Moreover, initiators could improve or tailor their city ranking or index to the needs of the societal groups the city ranking or index is intended for.

Secondly, future research is needed to determine how to specifically enhance city rankings and indexes. This study identified points of improvement for the HCI and city rankings and indexes in general. However, how best to incorporate these points in a city ranking or index remained inconclusive in this study. Therefore, future research is needed to guide how city rankings and indexes can be enhanced more specifically. Consequently, it is strongly recommended for future research to investigate how to incorporate a weighting system for the characteristics assessed in a city ranking or index to cover for local contexts. This was frequently mentioned as a needed point of improvement and could significantly enhance a city ranking or index.

Lastly, given the finding that an integral view of health is necessary, it is recommended that future research elaborately investigates the relationship between healthy cities, concerning the design of the urban environment, and the health of their residents. Such research can shed further light on the impact of a healthy urban environment on the health of residents. It also responds to the growing belief that it is important to integrate the social and physical domain in municipalities. All in all, the findings of this study open up various opportunities for future research.

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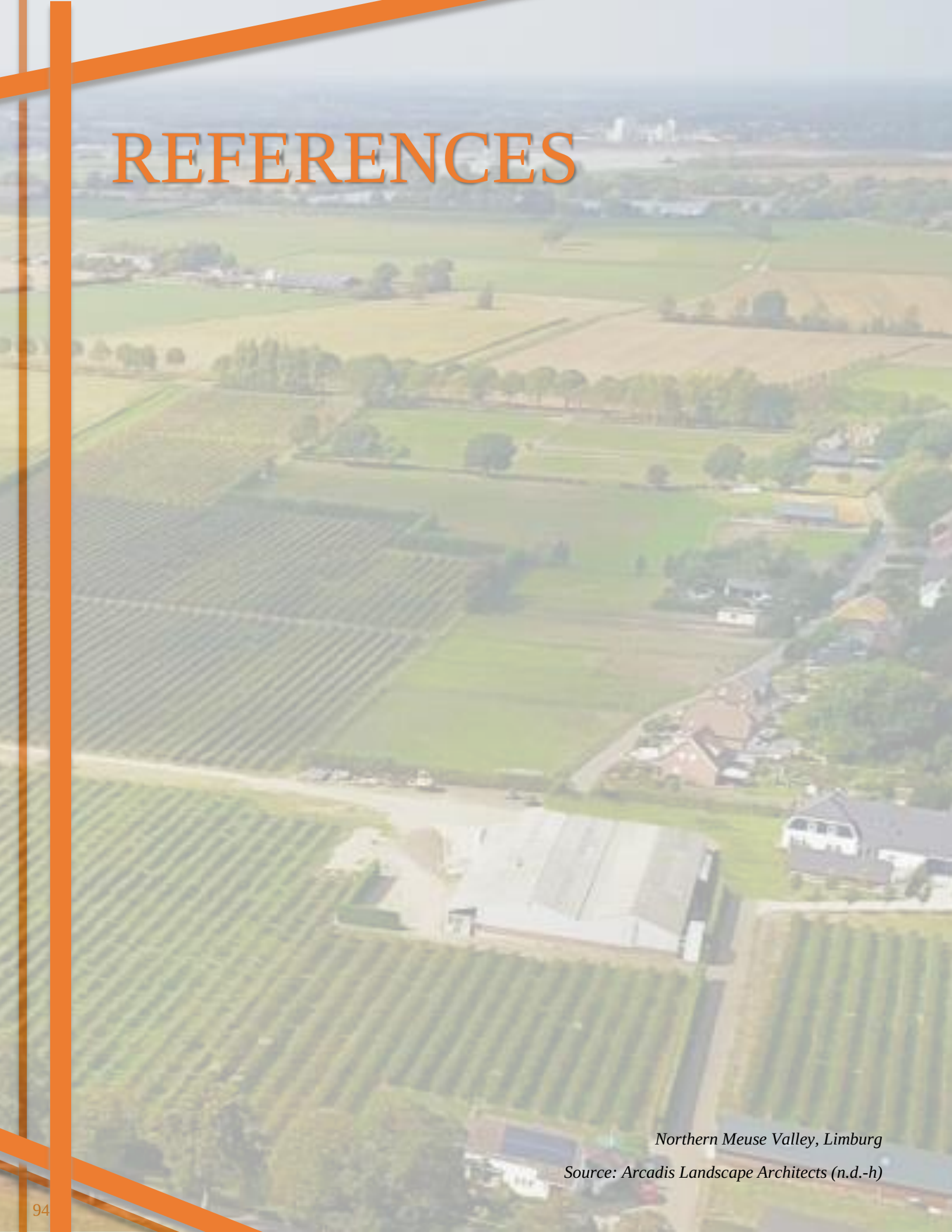

Northern Meuse Valley, Limburg

Source: Arcadis Landscape Architects (n.d.-h)

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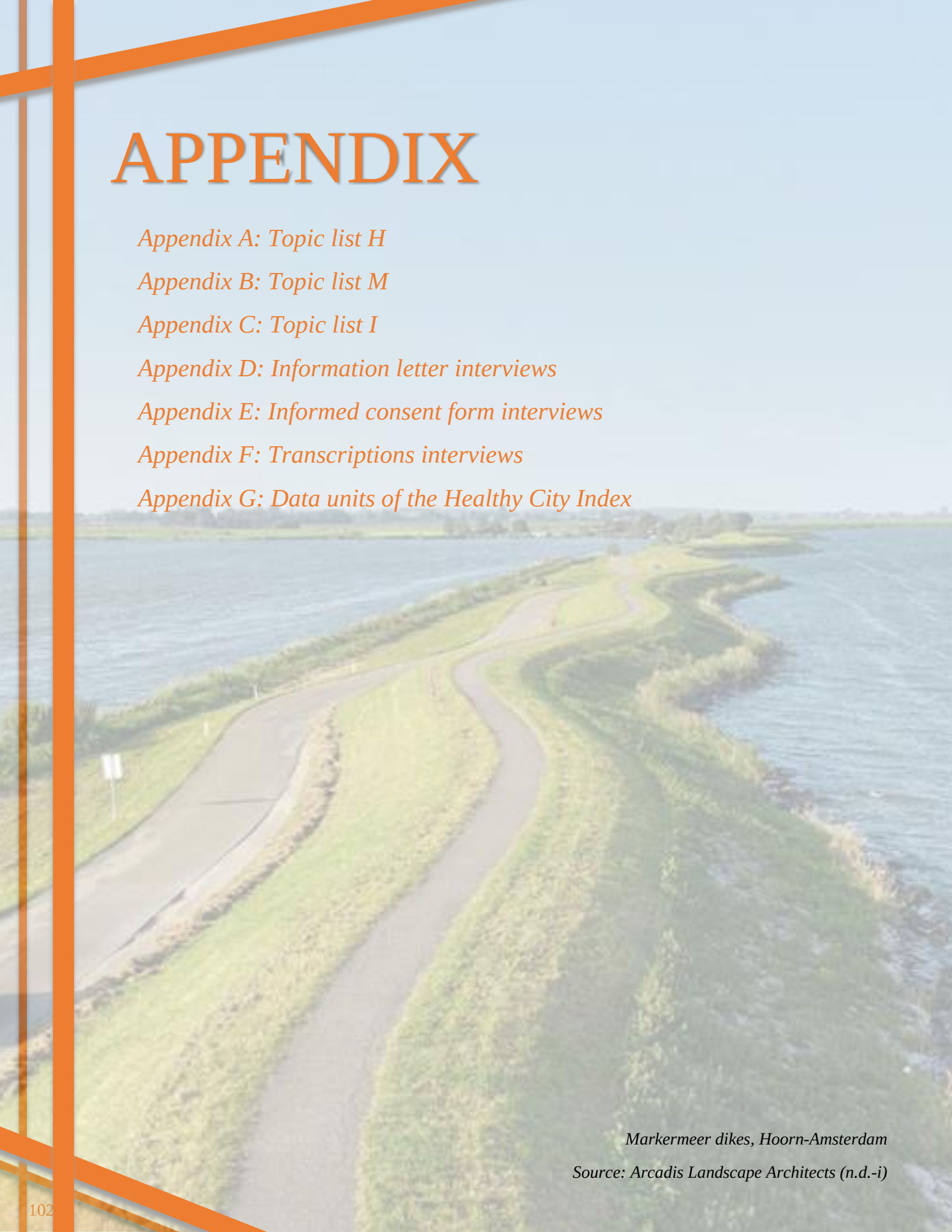
APPENDIX



Markermeer dikes, Hoorn-Amsterdam

Source: Arcadis Landscape Architects (n.d.-i)

Appendix

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Appendix A: Topic list H

Introductie

- Korte introductie van de onderzoeker
- Uitleg over het onderzoek en de relevantie van het onderzoek a.d.h.v. de informatiebrief
- Bevestig de toestemmingsverklaring en de toestemming om het gesprek op te nemen
- Vraag of er eventuele vragen zijn vanuit de participant voordat het interview begint
- Uitleg over de opzet van het interview
- ⇨ ***Opname starten***

Rol participant

- Zou u uzelf kort kunnen introduceren?
- Wat is uw rol binnen de organisatie en hoe bent u momenteel betrokken bij het ontwikkelen van een gezonde stedelijke leefomgeving?

Topic 1: Gezonde steden

Algemeen over de gezonde stad

- Wat is naar uw mening een gezonde stad?
  - Waarom definieert u een gezonde stad als zodanig?
  - De gezonde stad is een begrip dat aan verandering onderhevig is. Is de gezonde stad in die zin meer een theoretisch ideaal dat wellicht nooit te behalen of is het ook realiseerbaar?
- Is een gezonde stad naar uw mening belangrijk?
  - Waarom?

Bereiken van een gezonde stad

- Hoe kan volgens u een gezonde stad bereikt worden?
  - Hoever moet een stad gaan om een gezonde stedelijke leefomgeving te bereiken?
  - Wat is de rol van ruimtelijke ordening/stadsplanning hierbij?

Uitdagingen bereiken gezonde stad

- Komt u in uw werkveld ook uitdagingen tegen omtrent het bereiken van een gezonde stedelijke leefomgeving?
  - Kunt u hier voorbeelden van noemen?
  - Hoe wordt er omgegaan met deze uitdagingen? (En waarom op deze manier?)

Topic 2: Stedelijke ranglijsten

Koppeling gezonde stad en gebruik stedelijke ranglijsten \\ Gezonde Stad Index

Er worden steeds meer ranglijsten gepubliceerd die betrekking hebben tot stedelijke onderwerpen, zoals gezondheid of duurzaamheid. Een concreet voorbeeld van een dergelijke ranglijst is de Gezonde Stad Index.

- Bent u bekend met de Gezonde Stad Index?
  - **Zo ja**:
    - Zou u kort kunnen uitleggen wat de Gezonde Stad Index is?
    - Wat betekent de Gezonde Stad Index voor u?

        - Komt u in het werkveld veel mensen tegen die de Gezonde Stad Index als referentie gebruiken voor het ontwikkelen van een gezonde stedelijke leefomgeving?
            - Waarom wel / niet?
            - Zou u het wel graag willen zien? Dat steden zich meer vasthouden aan dit soort ranglijsten voor het ontwikkelen van de stedelijke leefomgeving?
                - Waarom?
    - **Zo nee**:
        - Wat is uw mening over stedelijke ranglijsten in het algemeen?
        - Komt u in het werkveld veel mensen tegen die de stedelijke ranglijsten als referentie gebruiken in het ontwikkelen van een gezonde stedelijke leefomgeving?
            - Waarom wel / niet?
            - Zou u het wel graag willen zien? Dat steden zich meer vasthouden aan dit soort ranglijsten voor het ontwikkelen van de stedelijke leefomgeving?
                - Waarom?

Topic 3: Gebruik van indicatoren in het ontwikkelen van de stedelijke leefomgeving

Link ranglijst naar gezonde steden
Een ranglijst, en zo ook de Gezonde Stad Index, is opgesteld uit indicatoren.

- Wat is uw mening over het gebruik van indicatoren in het bereiken van een gezonde stedelijke leefomgeving? Ook wel het gebruik van data.

Uit mijn literatuuronderzoek blijkt dat de inrichting van een stad vaak gebeurt op basis van gevoel en preferenties.

- Hoe kijkt u hier tegenaan?
- Zou u het graag willen zien, dat steden zich meer vasthouden aan indicatoren voor de inrichting en ontwikkeling van de stedelijke leefomgeving?
    - Waarom?
- Moet er naar uw mening iets worden aangepast aan de manier van ontwikkelen om meer draagvlak te krijgen voor het gebruik van indicatoren?

Einde

- Aangeven dat de vragen beantwoord zijn

De laatste vraag: Als u nog iets mee mocht geven over het onderwerp gezonde stad en stedelijke ranglijsten, wat zou u dan kwijt willen?

- Vragen of er naar aanleiding van het gesprek vragen, op- en of aanmerkingen zijn
- Bedank de participant voor de tijd en medewerking aan het onderzoek
- Navragen over het delen van het onderzoek en/of samenvatting
- Mochten er later nog vragen zijn over het interview of het onderzoek in het algemeen, kunt u mij gerust mailen en/of bellen via de contact gegevens op de informatiebrief
- Nogmaals de participant bedanken

– **einde interview**

Appendix B: Topic list I

Opmerking: het woord 'index' in deze interview guide verwijst naar de Gezonde Stad Index.

Introductie

- Korte introductie van de onderzoeker
- Uitleg over het onderzoek en de relevantie van het onderzoek a.d.h.v. de informatiebrief
- Bevestig de toestemmingsverklaring en de toestemming om het gesprek op te nemen
- Vraag of er eventuele vragen zijn vanuit de participant voordat het interview begint
- Uitleg over de opzet van het interview
- ⇨ ***Opname starten***

Rol participant

- Zou u uzelf kort kunnen introduceren?
- Wat is uw rol binnen de organisatie en hoe bent u momenteel betrokken bij het ontwikkelen van een gezonde stedelijke leefomgeving?

Topic 1: Gezonde steden, stedelijke ranglijsten en hun indicatoren: de Gezonde Stad Index

Algemene vragen over de index

Definities. De Gezonde Stad Index definieert een gezonde stad volgens de definitie van de WHO en de kenmerken die bekeken zijn, komen uit het RIVM-model. Er wordt hierbij gefocust op de gebouwde omgeving.

- Wat is de reden geweest voor deze focus en het kiezen van deze **definitie en dit model**?
    - Daarop aansluitend, wat is de reden geweest voor **het kiezen van de bekeken kenmerken en bijhorende eenheden (dataeenheden)?**
        - De bekeken kenmerken hebben een gelijke weging in het totaalplaatje, wat is hiervoor de reden geweest?
        - Hebben steden ook zelf data moeten aanleveren?

- De gezonde stad is een begrip dat aan verandering onderhevig is. Is een gezonde stad in die zin meer een theoretisch ideaal dat wellicht nooit te behalen is of is het ook realiseerbaar?
    - Hoe helpt de index bij het realiseren van een gezonde stad?
    - Hoe kan volgens u een gezonde stad bereikt worden?
        - Wat is hierbij de rol van ruimtelijke ordening/stadsplanning?

- **EXTRA**: Wat maakt het bereiken van een gezonde stad complex is?

Een aantal voorbeelden die uit de literatuur kwamen als verklaring van de complexiteit van een gezonde stad zijn, de multi-dimensionaliteit van gezondheid en de daarmee samenhangende gedeelde (en onduidelijke) verantwoordelijkheid van belanghebbenden, de competitie met andere agenda-items zoals economische vooruitgang, beperkte middelen en kennis, de lange termijn tegenover de korte termijn doelen (de meeste aanpassingen voor een gezonde stad zijn lange termijn veranderingen en gaan over meerdere ambtsperiodes) en de constante verandering van het begrip / betekenis van gezondheid.

- Hoe helpt de index om deze complexiteit aan het licht te brengen?

Proces. Kunt u mij meer vertellen over het proces achter het opstellen van de index?

- Wie hebben allemaal meegewerkt aan het maken/publiceren van de index?

- Hoe soepel verliep het proces met betrekking tot het kiezen van de kenmerken, dataeenheden en geanalyseerde steden?
- Waren er discussies die de uiteindelijke index vorm hebben gegeven en/of dermate beïnvloed hebben?
    - Kunt u hier meer over vertellen? *(mocht het gedeeld worden)*
- **EXTRA:** Arcadis is een bedrijf in de private sector (een marktpartij). In mijn literatuuronderzoek is naar voren gekomen dat de meeste stedelijke ranglijsten worden gemaakt door de private sector (marktpartijen).
    - Heeft u hier voor- en/of nadelen in bevonden (met betrekking tot het doel van de index / ranglijst)?

Doel. Wat willen jullie bereiken met het maken en publiceren van de index? Of wel, wat is voor jullie het doel van de index?

- In de literatuur werd het promoten van het eigen bedrijf om nieuwe klanten aan te trekken als reden genoemd voor het maken van stedelijke ranglijsten door private organisaties (marktpartijen).
    - Hoe kijkt u hiertegen aan?
    - Is dit ook het geval geweest voor de Gezonde Stad Index?

Selectiecriteria - steden. De geanalyseerde steden bestaan uit de twaalf gemeenten met het hoogste inwoneraantal van elke provincie aangevuld met de dertien grootste gemeenten van Nederland.

- Wat is de reden geweest om deze steden te analyseren?

In mijn literatuuronderzoek is naar voren gekomen dat stedelijke ranglijsten vooral de ‘usual suspects’ opnemen in de ranglijst. Dit zijn vaak de grootste steden.

- Hoe kijkt u hier tegenaan?
- Zijn er plannen om in de toekomst ook kleinere gemeenten mee te nemen in de Gezonde Stad Index?
    - Waarom wel/niet?

Gebruik van de index door gemeenten

- Wat willen jullie dat steden doen met de index? Hoe ziet u graag dat steden gebruik maken van de index?
- Zijn er naar u weet gemeenten die de Gezonde Stad Index als referentie gebruiken voor het ontwikkelen van een gezonde stedelijke leefomgeving?
    - **Wanneer ja:**
        - Weet u ook hoe ze gebruik maken van de Gezonde Stad Index?
            - **Zo ja:** Kunt u hier meer over vertellen?
        - Wat brengt dit teweeg voor jullie/ welke gevoelens wekt dit op bij jullie? Dat gemeenten de index gebruiken.
    - **Wanneer nee:**
        - Zou u het wel graag willen zien? Dat steden zich meer vasthouden aan dit soort ranglijsten voor het ontwikkelen van de stedelijke leefomgeving.
            - Waarom wel/niet?

Een manier om gebruik te maken van een stedelijke ranglijst als referentie voor het ontwikkelen van een gezonde stedelijke leefomgeving is het gebruik van de indicatoren die de Gezonde Stad Index gebruikt. Uit mijn literatuuronderzoek is gebleken dat het ontwikkelen van stad en/of gemeente vaak gebeurt op basis van intuïtie, gevoel en preferenties in plaats van indicatoren.

- Aansluitend op de vragen hiervoor over het gebruik van de Gezonde Stad Index, hoe kijkt u aan tegen het gebruik van dergelijk indicatoren, ook wel data, voor het ontwikkelen van de stedelijke leefomgeving?
    - Moet er naar uw mening iets worden aangepast aan de manier van het ontwikkelen van de stedelijke leefomgeving om (meer) draagvlak te krijgen voor het gebruik van indicatoren?

Veranderingen aan de index

De Gezonde Stad Index is nu voor de tweede keer gepubliceerd.

- Hebben jullie van gemeenten gehoord wat zij goed en/of minder goed vonden aan de index en hoe deze mogelijk verbeterd kan worden voor een volgende editie?
    - **Zo ja:** kunt u hier meer overtellen?
    - **Zo nee:** weten jullie waarom niet?
- Wat zouden jullie in de volgende edities *(mocht het gedeeld worden)* zelf willen veranderen op basis van wat jullie nu weten?

Topic 2: City benchmarking – Kritiek- en pluspunten

We hebben het al kort over kritiek- en pluspunten van stedelijke ranglijsten gehad. Nu zou ik graag willen vragen wat jullie zelf pluspunten en mindere punten van de index vinden.

- Wat zijn volgens u de pluspunten van de index?
    - Waar zijn jullie het meeste trots op?
- Wat zijn volgens u de mindere punten/ verbeterpunten van de index?

Vragen die iets dieper ingaan op de kritiek

Om iets dieper op de kritiekpunten in te gaan, bespreek ik graag een aantal kritiekpunten die naar voren zijn gekomen uit mijn literatuuronderzoek.

1. **Ten eerste wordt vaak de methode bekritiseerd.**

Een aantal voorbeelden zijn het gebrek aan duidelijk attribuut waarop steden worden gerangschikt, transparantie over de analyses en berekeningen en focus op kwantitatieve en secundaire data (te weinig publieke betrokkenheid van bijv. bewoners, onderwijs en autoriteiten).

- Hoe kijken jullie hier tegenaan? Wat vinden jullie van deze punten?
    - Als jullie deze voorbeelden horen, hoe zijn jullie hier mee omgegaan bij de index?
    - Zijn er met betrekking tot de methode dingen waar jullie trots op zijn en/of zouden willen veranderen?

2. **Lokale context.**

Een ander kritiek punt dat vaak naar voren komt binnen de literatuur, heeft te maken met de context afhankelijkheid waar steden mee te maken hebben. Uit mijn literatuuronderzoek is gekomen dat stedelijke ranglijsten vaak een ideaalbeeld hanteren dat niet door elke stad en/of gemeente te bereiken is, door bijvoorbeeld externe factoren en lokale condities waar steden en/of gemeenten mee te maken hebben.

- Hoe kijkt u hier tegenaan?
    - Ziet u een mogelijkheid om dit (de externe factoren en lokale condities) in een stedelijke ranglijst, specifiek de Gezonde Stad Index, te verwerken?
        - Waarom wel/niet?

Als verandering wordt in de literatuur genoemd dat het passender zou zijn voor stedelijke ranglijsten om steden te beoordelen op hoe ze presteren ten opzichte van hun eigen beleid en ambities, in plaats van tegenover elkaar.

- Hoe kijkt u hier tegenaan?
    - Ziet u een mogelijkheid om dit in een stedelijke ranglijst, niet specifiek de Gezonde Stad Index, te verwerken?
    - Waarom wel/niet?

3. Aard van de ranglijst.

Gerelateerd aan wat we net besproken hebben over het beoordelen op hoe ze presteren ten opzichte van steden hun eigen beleid en ambities, wordt de aard van ranglijsten ook vaak bekritiseerd. Zowel om de reden dat het vaak gebruikt wordt om klanten te werven alsook dat ranglijsten vaak focussen op competitie in plaats van samenwerking.

- Is dit ook het geval voor de Gezonde Stad Index?
    - Zou u zeggen dat de index meer focust op competitie of samenwerking?
        - Hoe is dit merkbaar?

Einde

- Aangeven dat de vragen beantwoord zijn

De laatste vraag: Als u nog iets mee mocht geven over het onderwerp gezonde stad en stedelijke ranglijsten, wat zou u dan kwijt willen?

- Vragen of er naar aanleiding van het gesprek vragen, op- en of aanmerkingen zijn
- Bedank de participant voor de tijd en medewerking aan het onderzoek
- Navragen over het delen van het onderzoek en/of samenvatting
- Mochten er later nog vragen zijn over het interview of het onderzoek in het algemeen, kunt u mij gerust mailen en/of bellen via de contact gegevens op de informatiebrief
- Nogmaals de participant bedanken

– **einde interview**

Appendix C: Topic list M

Opmerking: het woord 'index' in deze interview guide verwijst naar de Gezonde Stad Index.

Introductie

- Korte introductie van de onderzoeker
- Uitleg over het onderzoek en de relevantie van het onderzoek a.d.h.v. de informatiebrief
- Bevestig de toestemmingsverklaring en de toestemming om het gesprek op te nemen
- Vraag of er eventuele vragen zijn vanuit de participant voordat het interview begint
- Uitleg over de opzet van het interview
- ⇨ ***Opname starten***

Rol participant

- Zou u uzelf kort kunnen introduceren?
- Wat is uw rol binnen de gemeente en hoe bent u momenteel betrokken bij het ontwikkelen van een gezonde stedelijke leefomgeving in *gemeente*?

Topic 1: Gezonde steden, stedelijke ranglijsten en hun indicatoren: de Gezonde Stad Index

Gezonde steden - algemeen

- Hoe definieert *gemeente* een gezonde stad/ gezonde stedelijke leefomgeving?
    - Wat is de rol van ruimtelijke ordening/stadsplanning in deze definitie en daarmee het bereiken van een gezonde stedelijke leefomgeving?
        - Hoe hangt dit samen met andere beleidsgebieden?
    - Wat doet *gemeente* op het gebied van het bereiken van een gezonde stedelijke leefomgeving?
        - Welke uitdagingen komt *gemeente* tegen in het bereiken van een gezonde stedelijke leefomgeving?

Een aantal voorbeelden die uit de literatuur kwamen als verklaring van de complexiteit van een gezonde stad zijn, de multi-dimensionaliteit van gezondheid en de daarmee samenhangende gedeelde (en onduidelijke) verantwoordelijkheid van belanghebbenden, de competitie met andere agenda-items zoals economische vooruitgang, beperkte middelen en kennis, de lange termijn tegenover de korte termijn doelen (de meeste aanpassingen voor een gezonde stad zijn lange termijn veranderingen en gaan over meerdere ambtsperiodes) en de constante verandering van het begrip / betekenis van gezondheid.

- Herkent *gemeente* deze uitdagingen?
    - Kunt u hier meer over vertellen?
- En hoe gaat *gemeente* om met de uitdagingen?

Gezonde Stad Index

We hebben net vooral over gezonde steden in het algemeen gesproken, nu wil ik het graag over de Gezonde Stad Index hebben. De Gezonde Stad Index definieert een gezonde stad volgens de definitie van de WHO en de kenmerken die bekeken zijn, komen uit het RIVM-model.

- Voor de zekerheid, bent u bekend met deze **definitie, het model en de kenmerken en gebruikte dataeenheden**? *Definitie, model en kenmerken met eenheden bij de hand hebben voor mogelijke vragen hierover. Indien nee, korte uitleg geven en/of delen van deze vraag mogelijk overslaan.*

- Wat is uw mening over het gebruik van deze definitie?
- Wat is uw mening over het gebruik van de bekeken kenmerken?
  - Weet u (ongeveer) welke data (eenheden) zijn gebruikt voor de kenmerken?
    - **Zo ja:** wat vindt u van de gebruikte data, bent u het eens met deze eenheden?
    - **Zo nee:** dan slaan we deze vraag even over en gaan naar de volgende vraag.
  - Zoals besproken en/of u mogelijk weet, zijn de kenmerken ingedeeld in 5 verschillende domeinen. De kenmerken hebben allemaal een **gelijke weging** binnen het domein. De domeinen hebben een gelijke weging binnen de overall score. De overall score is genomen over de scores op de domeinen.
    - Is *gemeente* het eens met deze weging van kenmerken?
      - Of zou *gemeente* graag verschil in weging zien, bijvoorbeeld dat het ene kenmerk en/of domein meer weegt (dus belangrijker) is in de score?
        - **Zo nee:** waarom niet? Wat zou er veranderd moeten worden?
        - **Zo ja:** wat is hiervoor de reden?

Meer over de index

- Is *gemeente* tevreden over de uitkomst van de index? *Bij de hand hebben hoe ze hebben gescoord.*
  - Waarom wel/niet?
  - Is *gemeente* actief bezig om de plek op de index te verhogen?
    - **Zo ja:**
      - Waarom?
      - Wat doen jullie zoal om jullie plek de index te verhogen?
    - **Zo nee:**
      - Waarom niet?

Gebruik van de index door gemeenten

We hebben het net kort over de uitkomst van de index gehad. Nu wil ik het graag hebben over het gebruik van de index. De index is voor de tweede keer gepubliceerd. **Bij nieuwe steden**: *gemeente* staat er nu ook op.

- Wat brengt/bracht de index teweeg bij *gemeente*?
  - Zijn er veranderingen doorgevoerd sinds de publicatie van de index?
    - Welke? Kunt u hier meer over vertellen?
  - Zou er gezegd kunnen worden dat gezondheid/ een gezonde stedelijke leefomgeving voor *gemeente* een belangrijker thema is geworden sinds de publicatie van de index?
    - **Zo ja:**
      - Waaraan is dit te merken?
      - In hoeverre is de index een drijfveer geweest?
    - **Zo nee:** Waarom niet?

- Gebruikt *gemeente* de Gezonde Stad Index als referentie voor het ontwikkelen van een gezonde stedelijke leefomgeving?
  - **Zo ja:**
    - Hoe maakt *gemeente* gebruik van de Gezonde Stad Index?
    - Kunt u hier meer over vertellen?

- **Zo nee:**
  - Waarom gebruikt *gemeente* de Gezonde Stad Index niet?
  - Waar ligt dit aan?
  - Zou *gemeente* wel graag de Gezonde Stad Index willen gebruiken?
    - **Zo ja:**
      - Waarom?
      - Wat houdt *gemeente* tegen om de index te gebruiken?
    - **Zo nee:**
      - Waarom niet?
      - Wat houdt *gemeente* tegen om de index te gebruiken?

INDICATOREN - ACHTERGRONDINFORMATIE VOOR INTERVIEWER: Een manier om gebruik te maken van een stedelijke ranglijst als referentie voor het ontwikkelen van een gezonde stedelijke leefomgeving is het gebruik van de indicatoren die de Gezonde Stad Index gebruikt.

- Hoe geven indicatoren momenteel vorm aan de ontwikkeling van de stedelijke leefomgeving in *gemeente*?
- **EXTRA:** Gebruikt *gemeente* ook indicatoren, dataeenheden, die de index gebruikt heeft ook?
  - Waarom wel/niet?

Uit mijn literatuuronderzoek is gebleken dat een stad en/of gemeente vaak gebeurt op basis van intuïtie, gevoel en preferenties in plaats van indicatoren.

- Is dit ook merkbaar in *gemeente*?
- Is de index voor *gemeente* een drijfveer om beslissingen die betrekking hebben op een gezonde stedelijke leefomgeving meer op de indicatoren van de index te baseren?
  - Waarom wel/niet?

Topic 2: City benchmarking: Positie, kritiek- en pluspunten

Positie

We hebben het al over het gebruik van de index gehad. Aansluitend hierop, wil ik het graag hebben over kritiek- en pluspunten zoals bevonden door *gemeente*. Om te beginnen:

- Hoe zou de positie van *gemeente* tegenover de index over het algemeen getypeerd kunnen worden, kijkend naar de kritiek- en pluspunten tegenover de index?
  - Een aantal voorbeelden van posities zouden kunnen zijn: er wordt niks gedaan met de index en er is vooral kritiek, de index wordt gebruikt als bevestiging, de index wordt gebruikt om verbeteringen te door te voeren of te hoge ambities te verlagen enzovoorts.

Aansluitend op de verschillende manieren om met een ranglijst om te gaan, nu een aantal vragen over de kritiek en pluspunten van de index.

Kritiekpunten

- Welke kritiekpunten dan wel verbeterpunten zijn er op de index binnen *gemeente*?
  - Wat moet er volgens *gemeente* veranderen aan de index om deze kritiekpunten te tackelen?
  - Wat zouden jullie graag veranderd zien worden aan de index zodat jullie deze in kunnen zetten om een gezondere stedelijke leefomgeving te realiseren?

Vragen die iets dieper ingaan op de kritiek

Om iets dieper op de kritiekpunten in te gaan, bespreek ik graag een aantal kritiekpunten die naar voren zijn gekomen uit mijn literatuuronderzoek.

1. **Ten eerste wordt vaak de methode bekritiseerd.**

- Hoe kijken jullie hier tegenaan? Wat vinden jullie van de gebruikte methode van de index?
    - Zijn jullie het eens met de gebruikte methode?
    - Wat vinden jullie van de transparantie (en duidelijkheid) van de methode?
    - Zijn er met betrekking tot de methode dingen waar jullie trots op zijn en/of graag zouden zien dat deze veranderd worden?

EXTRA INFO INTERVIEWER: *Een aantal voorbeelden zijn het gebrek aan duidelijk attribuut waarop steden worden gerangschikt, transparantie over de analyses en berekeningen en focus op kwantitatieve en secundaire data (te weinig publieke betrokkenheid van bijv. bewoners, onderwijs en autoriteiten).*

2. **Lokale context.**

Een ander kritiek punt dat vaak naar voren komt binnen de literatuur, heeft te maken met de context afhankelijkheid waar steden mee te maken hebben. Uit mijn literatuuronderzoek is gekomen dat stedelijke ranglijsten vaak een ideaalbeeld hanteren dat niet door elke stad en/of gemeente te bereiken is, door bijvoorbeeld externe factoren en lokale condities waar steden en/of gemeenten mee te maken hebben.

- Hoe kijkt *gemeente* hier tegenaan?

Als verandering wordt in de literatuur genoemd dat het passender zou zijn voor stedelijke ranglijsten om steden te beoordelen op hoe ze presteren ten opzichte van hun eigen beleid en ambities, in plaats van tegenover elkaar.

- Hoe kijkt *gemeente* hier tegenaan?
    - Wordt dit wellicht intern al gedaan?
    - Is dit een taak die is weggelegd voor de index?

3. **Aard van de ranglijst.**

Gerelateerd aan wat we net besproken hebben over het beoordelen op hoe steden/gemeente presteren ten opzichte van hun eigen beleid en ambities, wordt de aard van ranglijsten ook vaak bekritiseerd. Zowel om de reden dat ranglijsten vaak gebruikt worden om klanten te werven alsook dat ranglijsten vaak focussen op competitie in plaats van samenwerking.

- Hoe kijkt u hier tegenaan?
    - Zou u zeggen dat de index meer focust op competitie of samenwerking?
        - Hoe is dit merkbaar?
            - Ervaren jullie mogelijk voor- en/of nadelen van de competitie?
            - Ervaren jullie mogelijk voor- en of nadelen van de samenwerking?
                - Stimuleert de index jullie om met andere gemeenten kennis te delen, bijv. het delen van best practices met gemeenten die hoger en/of lager op de ranglijst staan?

Pluspunten

We hebben het nu vooral over kritiek op de index gehad en wat er mogelijk zou kunnen veranderen aan de index om deze meer in te kunnen zetten als tool voor gemeenten om de stedelijke leefomgeving gezonder te maken.

- Wat zijn pluspunten volgens *gemeente* van de index?

Vragen die iets dieper ingaan op de pluspunten
Zoals we ook hebben gedaan bij de kritiekpunten, bespreek ik ook graag een aantal pluspunten die naar voren zijn gekomen uit mijn literatuuronderzoek.

1. **Gebruik.**

Ten eerste wordt aangegeven dat stedelijke ranglijsten gebruikt kunnen worden om de stedelijke leefomgeving te ontwikkelen. Een aantal voorbeelden daarvan zijn het helpen bij het opstellen van doelen, verdelen van financiële middelen, prioriteiten stellen, voor het legitimeren van beleidskeuzes en het identificeren van sterke en minder sterke punten van een gemeente.

- Hoe ervaart *gemeente* dit?
- Brengt de index deze voordelen voor *gemeente*?
    - Waarom wel/niet?
    - Kunt u mij hier meer over vertellen?

2. **Aandacht**

Een tweede punt is de aandacht die een gemeente krijgt op basis van de ranglijst. Dit kan helpen om discussies te starten over bepaalde onderwerpen maar ook om de gemeente zichtbaarheid op een groter toneel te geven en mogelijk aantrekkelijk te maken als vestigingslocatie voor bedrijven.

- Hoe heeft *gemeente* dit ervaren?

3. **Samenwerking**

Als laatste punt, komt als pluspunt vaak de potentie voor samenwerking tussen gemeenten/steden naar voren. Hier hebben we het net al kort over gehad.

- Zou u nog iets kwijt willen over dit pluspunt?

Veranderingen aan de index
We hebben het nu over de kritiek- en pluspunten gehad. Om het interview met een vooruitkijkende blik af te sluiten, nog een vraag over de veranderingen die jullie graag zouden zien.

- Wat zouden jullie graag veranderd zien worden aan de index zodat jullie deze in kunnen zetten om een gezondere stedelijke leefomgeving te realiseren?
    - **EXTRA:** Heeft *gemeente* ook contact met Arcadis om deze kritiek- en pluspunten door te geven?
        - Waarom wel/niet?

Einde

- Aangeven dat de vragen beantwoord zijn

De laatste vraag: Als u nog iets mee mocht geven over het onderwerp gezonde stad en stedelijke ranglijsten, wat zou u dan kwijt willen?

- Vragen of er naar aanleiding van het gesprek vragen, op- en of aanmerkingen zijn
- Bedank de participant voor de tijd en medewerking aan het onderzoek
- Navragen over het delen van het onderzoek en/of samenvatting

- Mochten er later nog vragen zijn over het interview of het onderzoek in het algemeen, kunt u mij gerust mailen en/of bellen via de contact gegevens op de informatiebrief
- Nogmaals de participant bedanken

– **einde interview**

Appendix D: Information letter interviews

INFORMATIEBRIEF

Onderzoeker: Ellen Kroon

Scriptiebegeleider Universiteit Utrecht: Prof. Dr. Jochen Monstadt

Master Spatial Planning - Faculteit Geowetenschappen Universiteit Utrecht - Nederland

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Tel: XX-XX XX XX XX [telephone number removed from this example letter for privacy reasons]

Masterscriptie Spatial Planning – Invloed van stedelijke ranglijsten op stedelijke ontwikkeling

Beste,

Mijn naam is Ellen Kroon. Ik ben masterstudent Spatial Planning aan de Universiteit Utrecht. Op dit moment ben ik bezig met mijn afstudeeronderzoek. Mijn onderzoek gaat over de invloed van stedelijke ranglijsten op de stedelijke ontwikkeling, in het bijzonder de invloed van de Gezonde Stad Index van Arcadis. Voor dit onderzoek neem ik interviews af met verschillende experts.

Naast ondersteuning vanuit de Universiteit Utrecht, word ik geholpen door Arcadis. Arcadis is bereid geweest om via een afstudeerstage mij meer inzicht te laten krijgen in het werkveld en hun netwerk ter beschikking te stellen om in contact te komen met experts gerelateerd aan de Gezonde Stad Index.

Het doel van mijn onderzoek is om te begrijpen wat de implicaties zijn van stedelijke ranglijsten, specifiek de Gezonde Stad Index van Arcadis, voor het ontwikkelen van een gezondere stedelijke leefomgeving. De laatste jaren is er een enorme groei aan stedelijke ranglijsten. Stedelijke ranglijsten hebben de potentie om steden te stimuleren de stedelijke leefomgeving te verbeteren. Stedelijke ranglijsten worden vaak gezien als een middel voor competitie in plaats van samenwerking. Binnen de academische literatuur is weinig te vinden over de invloed dan wel implicaties van stedelijke ranglijsten voor de praktijk alsook het ontwikkelen van de stedelijke leefomgeving. Met dit onderzoek hoop ik richting te kunnen geven aan het gebruik van stedelijke ranglijsten bij het ontwikkelen van de stedelijke leefomgeving.

Tijdens het interview kunt u vragen verwachten die betrekking hebben tot de volgende onderwerpen: de gezonde stad, stedelijke ranglijsten, stedelijke benchmarking (het vergelijken van prestaties van steden) en gebruik van indicatoren in de ontwikkeling van de stedelijke leefomgeving. Het interview zal naar verwachting tussen de 45 en 60 minuten duren. Voor het interview vraag ik u deze informatiebrief te lezen en een toestemmingsverklaring in te vullen en op te sturen per email.

Indien gewenst, deel ik na de voltooiing van mijn onderzoek graag een kopie en/of samenvatting van mijn onderzoek. Voor vragen kunt u mij bereiken op bovenstaande email en telefoonnummer.

Alvast bedankt voor uw tijd en deelname!

Met vriendelijke groet,

Ellen Kroon

Appendix E: Informed consent form interviews

TOESTEMMINGSVERKLARING

Datum interview: _____

Naam participant: _____

Gelieve aan te kruisen (verplicht):

- ☐ Ik bevestig dat ik het informatieblad heb gelezen en het doel van het onderzoek begrijp.
- ☐ Ik ga ermee akkoord dat het (online) interview wordt opgenomen en de uitkomsten van het interview verwerkt worden in het onderzoek en mogelijke wetenschappelijke publicaties ten behoeve van het onderzoek.
- ☐ Ik begrijp dat deelname aan het (online) interview vrijwillig is en dat ik vrij te herroepen, zonder opgaaf van reden, mijzelf kan terugtrekken. Indien de terugtrekking plaatsvindt binnen 14 dagen na het interview, begrijp ik dat de resultaten niet verwerkt zullen worden in het onderzoek.
- ☐ Ik begrijp dat alle informatie die ik verstrek vertrouwelijk zal worden behandeld en worden gepubliceerd in een geanonimiseerde vorm, tenzij anders afgesproken *(slechts de rol van de participant binnen de desbetreffende organisatie zal worden gebruikt als soort identificatie om aan te geven met wie de interviews zijn afgenomen).*
- ☐ Ik begrijp dat alle gegevens met betrekking tot het (online) interview vertrouwelijk worden opgeslagen in met wachtwoord beveiligde mappen beschikbaar gesteld door de Universiteit Utrecht.

Om zowel het volledige potentieel van het interview te benutten als het interview te kunnen verwerken in het onderzoek, zou ik graag het interview op willen nemen. Na het interview zal ik vervolgens de opnamen van het interview transcriberen. Na afloop zal ik een samenvatting (indien gewenst het gehele transcript) van het interview opsturen zodat u dit kunt checken.

Indien gewenst aankruisen (optioneel):

- ☐ Ik ontvang graag een kopie van het gehele transcript van het (online) interview
- ☐ Ik ontvang graag een samenvatting van het afstudeeronderzoek
- ☐ Ik ontvang graag de eindversie van het afstudeeronderzoek

Dit ontvang ik graag op het volgende mailadres:

_____

_____ _____

Handtekening participant ***Datum***

_____ _____

Handtekening onderzoeker ***Datum***

Appendix F: Transcriptions of the interviews

The transcriptions of the interviews are provided to the supervisors at Utrecht University in a separate file to ensure the privacy of the experts.

Appendix G: Data units of the Healthy City Index

Table 10 Data units of the Healthy City Index (based on Boon et al. (2022))

Domain		Characteristics	Data units*
	Healthy built environment	A city that is spacious	Open Space Ratio
		A hygienic city (or a clean city)	Percentage of people that indicated to experience 'much nuisance' from physical degradation (questionnaire)
		With facilities accessible to and usable by everyone	Average distance to facilities
		A city with healthcare facilities accessible to all residents	Average distance to healthcare facilities
	Healthy mobility	A city where you can easily move around by bicycle	Research fietsstad 2020 top 100
			Modal split; percentage of cycling
		A city where you can easily move around on foot	Percentage of footpath surface related to the total paved surface
			Modal split; percentage of cycling
		A city with good public transport	Average distance to public transport
			Modal split; percentage of public transport
		A city with safe bicycle routes	Road fatalities per 100.000 inhabitants
			Traffic safety rate on a scale of 1 – 10 (questionnaire)
	Healthy outdoor space	A city with greenery to play in (availability of green)	M^2 per child in the age of 0 – 12 years
		A city where children can play outdoors	Percentage of 'strongly agree' with good play areas for children (questionnaire)
		A city that consciously creates quiet, sheltered places (noise, greenery, and wind)	Percentage of the built environment within 500 meters of walking distance from a neighbourhood park
		A city with greenery to look at	Normalised Difference Vegetation Index (NDVI) within the built-up area

Domain		Characteristics	Data units*
	Healthy environment	A city with good air quality (particulate matter PM10)	Average particulate matter PM10
		A city with good air quality (nitrogen NO2)	Average nitrogen NO2
		A city with little noise pollution	Percentage of inhabitants subject to noise exposure of over 60 dB to the facade
		A city focused on minimising heat stress	Percentage of the municipality subject to a wind chill of 35 degrees Celsius or above
	Healthy community	A city where people feel safe/ a safe city	Registered crimes (divided by the number of inhabitants)
			Neighbourhood safety rate (questionnaire)
		A city that offers opportunities to recover from stress (undisturbed rest, recreation)	Screening anxiety and depression Kessler-10 for inhabitants of 19 years and older (questionnaire)
		A city that entices people to exercise / a city with sufficient and high-quality sports and exercise facilities	Distance to sports facilities
			Percentage of the inhabitants of 19 years or older sufficing to the national exercise guideline
		A city with meeting places in public space	Social cohesion score on a scale from 1 – 10 (questionnaire)

**These are the used data units; the sources and detailed explanations can be found in the report by Boon et al. (2022).*