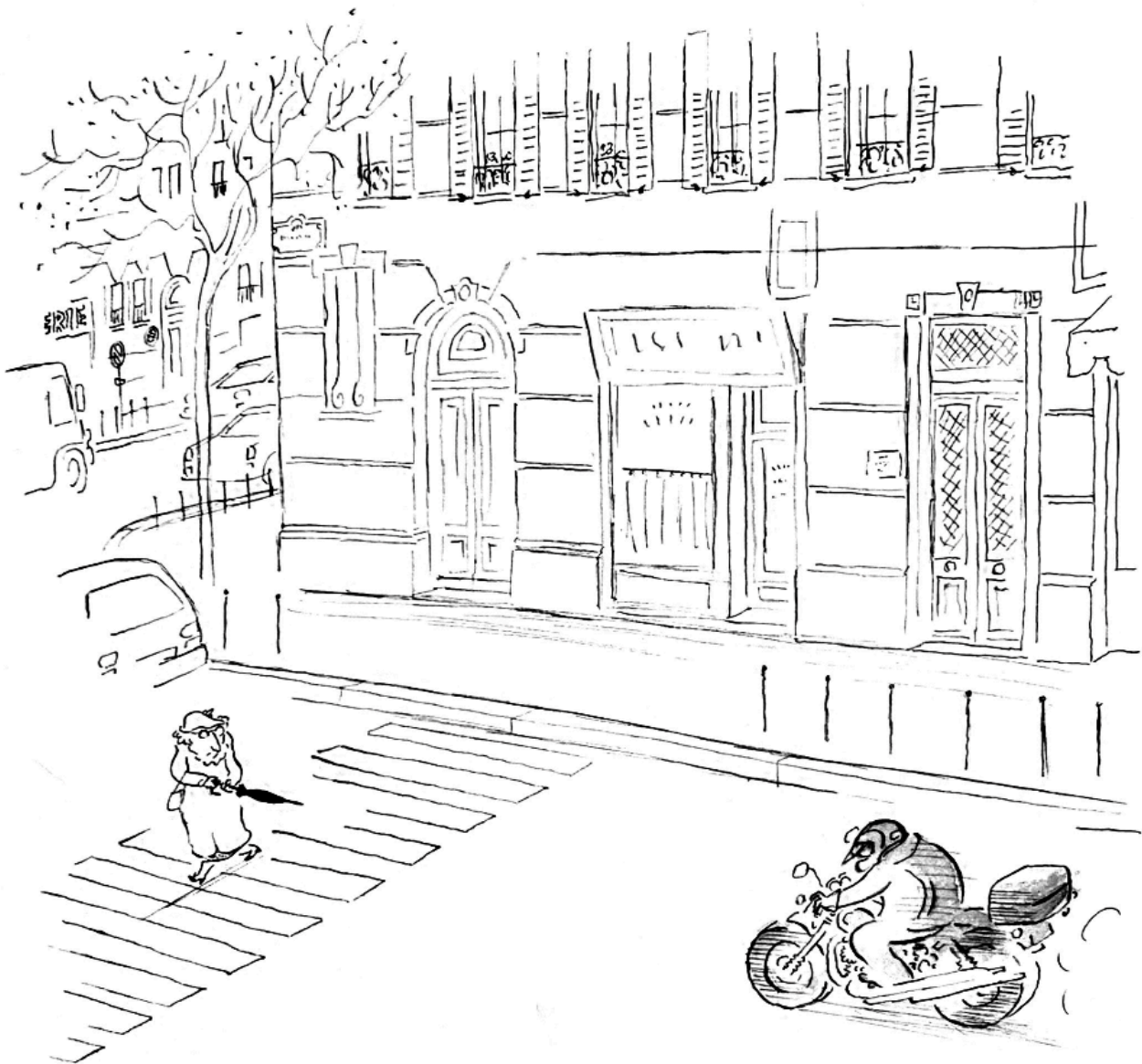


The differences in perceived livability in historical areas and New Urbanist developments in Utrecht, The Netherlands.



Bachelor thesis

Colophon

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Abstract

Literature has suggested that New Urbanism is essentially a renaissance of historic developments, naming it 'old-villageism' or 'new traditionalism'. The development approaches share a large number of design principles, accessible neighbourhoods by designing for walkability, sense of place, mixed land-use and housing diversity. This thesis analyses the residents' perception of these design principles and compares the outcomes as indicated by residents living in a New Urbanist development and residents living in a historic town center, with the aim to find out what the strengths and shortcomings are of each design, and what the areas can learn from each approach. The two selected sites are both in the municipality of Utrecht. The NU developed neighbourhood being "De Hoven", and the Binnenstad (city center) as the historic development. To compare the neighbourhoods and the perceptions of residents, a document review was conducted, various municipal documents on policy and zoning were reviewed as well as a map analysis. Then an identical survey was conducted in both neighbourhoods.

The results from the areas are very similar. The municipal vision and zoning show that De Hoven was to be built with the same characteristics as the Binnenstad. The survey responses are very comparable, indicating that the two forms of developments express their design principles in similar ways, and the quality is perceived comparable, this further strengthens the theory that NU is essentially a renaissance of historic city design.

Introduction

Background & research problem

New Urbanism is a relatively new sustainable development approach, conceived by the Congress for the New Urbanism in 1993 (CNU). Numerous papers have been written about this development approach and its principles, which seem to be comparable to the way historic Dutch cities have developed. These cities seem to adhere to the principles of New Urbanism. Yet little has been written on the comparison of the perceived livability of the two approaches to urban design. This thesis aims to find out the similarities and differences in design and how the livability is perceived in both developments. What can the two approaches learn from each other, and on which values can be improved?

The main research question is as follows: By considering the perceptions of residents, what is the relationship between livability in historically designed urban areas and livability in New Urbanist developments. Supporting questions to the main question are: How was the historic area designed and developed? What design principles of New Urbanism have been included in the layout and design of the area with special relevance to livability? What is the relationship in design of the two selected areas? And finally; How is livability in the two areas perceived by its residents?

To answer these questions, firstly, a theoretical background is established to explain and define the topic and concept used. At the end of this section, the hypotheses are stated. In the following section the method used to obtain data to answer the research questions, and the area of this case study is introduced. The next section presents and attempts to analyze the obtained results, to finally end the thesis with a conclusion and discussion on where possible knowledge gaps or incompleteness in the research may be.

Theoretical framework

New Urbanism

New Urbanism is a sustainable development approach founded in 1993 by the Congress for the New Urbanism (CNU). Jepson and Edwards (2010) define the approach as ‘a guide for development as something that can be ‘sustained’” they also provide some examples, stating that ‘New Urbanism is strongly design oriented’ and ‘the architecture is more humanized in scale and character and a focus on physical appearance and neighbourhood layout to improve quality of life’. The movement aims to create walkable, mixed-use neighborhoods that integrate in the natural environment and prioritize the needs of people over the needs of cars (Duany et al. 2000). It is based on the principles of traditional neighborhood design, which emphasizes the creation of public spaces and a sense of community (Krier 1988). Stanislav and Chin (2019) do not directly define New Urbanism but describe *outcomes* and elements of planning using the New Urbanism approach: ‘an approach to reinvent these disjointed suburban development models in an effort to instill a greater sense of place and community while providing physical frameworks that encourage social interaction and promote sustainable development’. These two explanations of New Urbanism are virtually the same, while the latter one is more narrowed down and places emphasis on the outcomes and values. The Congress for the New Urbanism (CNU) explains that the approach is about ‘creating sustainable, human-scaled places where people can live healthy and happy lives’ and that it helps create community through well-designed cities, towns, and neighbourhoods. The definition of the CNU, like the one Stanislav and Chin use, focusses more on outcomes. The principles are devised to increase quality of life through design. The CNU, established in 1993, lays out 27 principles for New Urbanism, addressing contemporary planning issues, from the region to the building level (CNU, LeGates & Stout, 2016). This thesis defines New Urbanism as a form of sustainable development aiming to improve quality of life through design.

In the article written by Jepson and Edwards (2010), academics and practitioners were, among other things, asked to match 14 development principles to three development approaches of sustainable planning: New Urbanism, Smart Growth and the Ecological city. The four strongest concepts linked to New Urbanism were: mixed land use, walkability, social spaces and sense of place. These concepts are the principles used for answering the main research question. Walkability is an outcome of urban design where users favor walking as mode of transport. This may be desirable for planners, because walking comes with several benefits, for instance health benefits, local economic benefits and is a sustainable form of transport; it limits the effects of transportation related pollution (Speck 2012; Manaugh & Kreidler 2013; Marzbani et al. 2020). For walking to be favoured, the mode must satisfy four main conditions, according to Speck (2012): ‘it must be useful, safe, comfortable and interesting’. Walking also increases neighbourhood interaction and enhances the sense of place (Manaugh & Kreidler 2013, p63), a concept which is strongly linked to New Urbanism. Human scale design is a desirable quality for making places walkable. This refers to design at a scale and ‘articulation of physical elements that match the size and proportions of humans’ (Ewing & Handy 2007 p.77). A recent planning concept discussing walkability is the ‘20-minute neighbourhood’. This concept suggests that distances of 1,6 kilometers are possible when designing a walkable neighbourhood (Merlin et al. 2021; Gower & Grodach 2022). Making neighbourhoods walkable means including a mix of land uses instead of exclusive (residential zoning), the user needs to be able to walk to their destination. Mixed land-use is a form of land use where

several categories such as housing, workplaces, shops, and other amenities are mixed, instead of separate zones (Van Wee et al. 2013). Mixed land use and thus an attractive mix of services can therefore be a stimulating factor for walkability (Stanislav & Chin 2019). Land use mix also includes housing diversity. Housing diversity refers to the range of housing options available, including different types of homes, such as single-family houses or apartments, as well as various forms of ownership, such as owner-occupied, renters and social housing. Housing diversity can also encompass differences in size, price, design, and age of housing units (Boarnet & Crane, 2001). The presence of housing diversity can have several benefits, including increasing affordability and accessibility for different income groups (Glaeser et al. 2003).

These four concepts all contribute to enhancing sense of space (Marzbani et al.) Sense of place is a very vague concept. It is easier to observe the resulting behaviour of people than define the concept (Shamai & Ilatov 2005, p.468). Sense of place refers to the emotional and psychological attachment individuals have to a particular physical location. It encompasses the way in which a person experiences and understands their surroundings, including the cultural and social characteristics of the place, as well as the personal memories and associations they have with it (Relph, 1976). This thesis utilizes the explanation that sense of place is a 'feeling' that increases attachment to place, emotional and function bonds between people and place. This increases the willingness of people for interaction and forms a stronger community (Jepson & Edwards 2010; Hashemnezhad, H., Heidari, A.A. & Hoseini, P.M. 2013)

Historic developments

Historic development of medieval cities is for the most part unplanned development, the towns represent 'organic' or 'natural' growth and design (Lilley 1999; 2001). During the renaissance period, the development process became intentional and more rational.

Beatley describes the European cities as a traditional form of density and compactness, and more to human scale (than US cities), these characteristics make for walkable places (2003). Historic city centers feature narrow, winding streets and a clear mix of uses. Shopping, living and office spaces are all located in close proximity.

A few authors have touched briefly on the similarities between the New Urbanism movement and the design of historic cities. Montgomery, in his book 'Happy City', (2013) makes the comparison about the aesthetic appearance, and states that New Urbanist neighborhoods utilize "nostalgic' architecture forms, designs that 'feel' village-y' Miller & Spoolman (2008) make the same comparison, stating that New Urbanism is a modern form of 'Old Villageism', a term coined by these authors. Others use the term 'New Traditionalism' to describe this observation (LeGates & Stout 1996, p363). The consensus is thus that the two are very much alike, the principles and outcomes are similar e.g., walking as preferred mode of transportation and having the amenities close by, but the driving force different because of developments in technology and circumstances at the time.

Livability

The principles come together as prerequisites to high livability. Livability is a well discussed topic in academic literature. 'Livability is an umbrella to a variety of meaning, which depends both on the objects of measurement and the perspective of those making the measurement.' (Shamsuddin et al. 2012, p169). These meanings can be of the perception of the individual

making the measurement of the environment and the quality of place. Relevant principles to the livability of a space include mixed land-use and easy access to services, compact urban form, and walkability. The resulting livable space results in a secure environment to live, work and play, with a high quality of living, environmental sustainability, and social cohesion (Heylen 2006; Shamsuddin et al. 2012; Stanislav & Chin 2019).

The conceptual model visualizes the discussed concepts and theories from the previous section.

As shown in the theoretical framework, both the New Urbanist developments and historic developments share at least four characteristics of livable neighbourhoods. These are Walkability, Sense of Place, Mixed Land-Use and Housing Diversity. The perception and expression of these values by residents is what makes the neighbourhood truly work and be experienced as 'livable'.

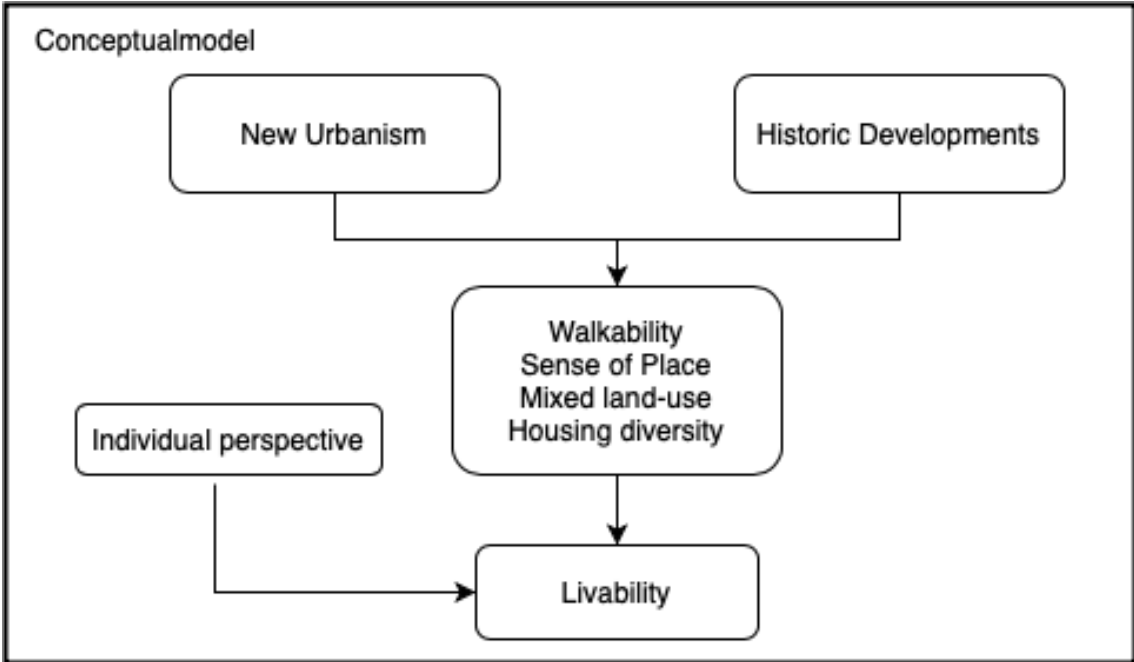


Figure 1, Conceptual model

The author hypothesis that New Urbanism shares the main body of characteristics and principles with the structure and design of historic cities, but the author postulates that, due to various contributing factors, the perceived livability by residents and users of the space in the New Urbanist development is lower than in the historic center.

Methodology

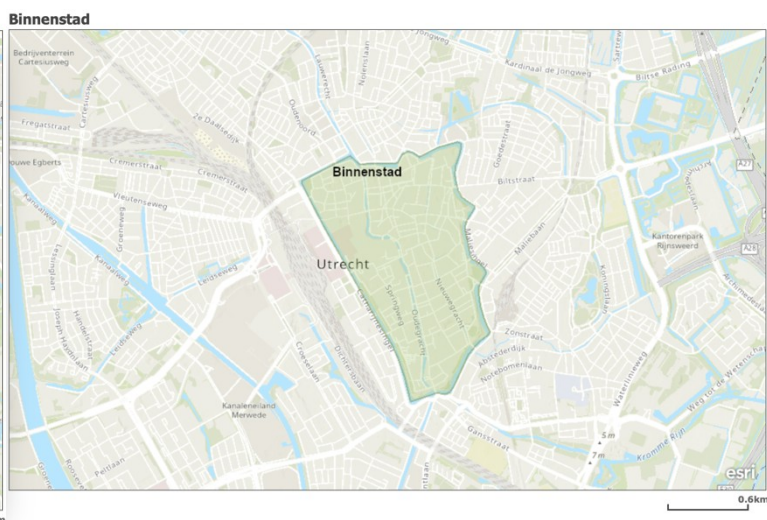
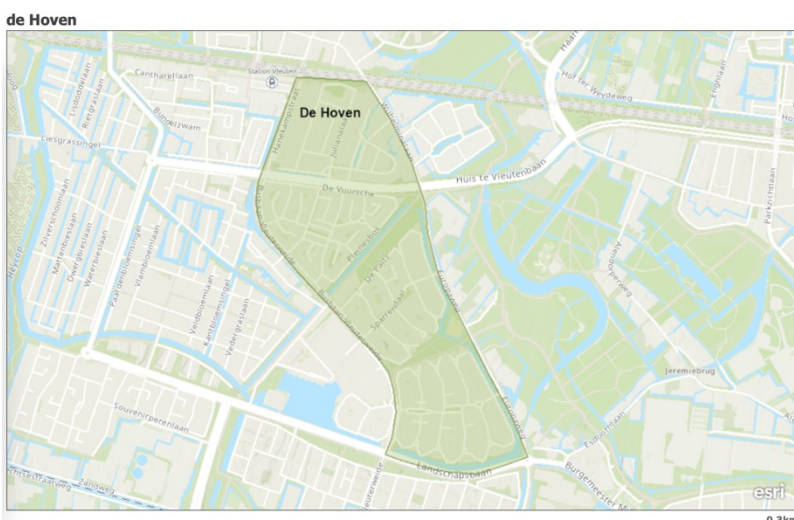
Study area

In order to facilitate a comparative analysis, the author has selected two areas which meet the following qualities and requirements: the selected neighbourhoods for comparison must be within the same municipality and be classified as New Urbanist development and historic development each. For the New Urbanist development, the neighbourhood 'de Hoven' is selected (Van Drenth 2019), in the district Vleuterweide in the city of Utrecht. This neighbourhood was designed in 1996 by bureau Krier & Kohl using the principles of New Urbanism (Van Drenth 2019). For the historic development, the center of Utrecht, de 'Binnenstad', is chosen for this case study. The first settlements were built around the year 50, in the form of a Roman military settlement. In the year 1122 Utrecht gained city rights and the defensive moats were constructed and are still there today (Het Utrechts Archief). An overview of the location of both areas in relation to each other is pictured on map 1. On maps 2 and 3 the neighbourhoods are displayed in more detail.



Figure 2, Locations Overview. Source: Author

Map data © OpenStreetMap contributors, CC-BY-SA



Esri, EsriNL, Rijkswaterstaat, Intermap, NASA, NGA, USGS | Esri Community Maps Contributors, Kadaster, Esri, HERE, Garmin, Foursquare, GeoTechnologies, Inc, METI/NASA, USGS

Esri, EsriNL, Rijkswaterstaat, Intermap, NASA, NGA, USGS | Esri Community Maps Contributors, Kadaster, Esri, HERE, Garmin, Foursquare, GeoTechnologies, Inc, METI/NASA, USGS

Figure 3, De Hoven detail. Source: Author

Figure 4, Binnenstad detail. Source: Author

Data collection method

The data collection consists of three parts, a document review, map analysis and a survey of residents in the designated neighbourhoods.

The document review considers policy documents, zoning documents and regulations for the respective neighbourhoods published by the municipality of Utrecht.

Municipal documents

Policy, zoning, and regulation documents, or 'bestemmingsplannen' (specifically Bestemmingsplan Vleuterweide, 2014) are available through ruimtelijkeplannen.nl and include the municipal vision for the area, rules and regulations and a variety of other information on the intended use of space for the neighbourhood. The documents disclose the design principles applied in the design of the area. This vision, the rules and zoning of the Binnenstad and De Hoven will be compared, and the differences and similarities is laid out.

Map analysis

Geographical Information Systems software (GIS) in combination with Google Maps is used to analyze the walkability of both neighbourhoods and the land-use mix, to visualize the ability to reach services on foot and the overall availability. Google maps is used to determine the locations of the selected amenities for comparisons, this data will be use to create comprehensible maps in ArcGIS. The maps will be compared on the spread, availability and accessibility to determine differences and similarities.

Survey

The core of this research are the perceived qualities of the design approaches. To measure the principles, several rounds of surveying have been conducted in the Binnenstad and De Hoven. Residents of both neighbourhoods were presented with the same survey questions, available in appendix A. Because residents are not experts on the topic, comprehensive questions and indicators of the aforementioned design principles need to be carefully formulated. The design of the indicators is based on the paper by Stanislav & Chin (2019) and Speck (2019). Table 1 provides an overview of the indicators used in the survey.

Table 1, overview of indicators

Principle	Indicator
Walkability	Distance to amenities and services Safety Comfort/ease Enjoyment Utility
Sense of Place	Sense of belonging Connection to area Interaction with neighbors
Mixed land-use	Share of amenities and services in the area

The respondents indicate their perception for every indicator on a scale from 0-5, where 0 is 'strongly disagree' and 5 is 'strongly agree'. The marks given for each indicator in each area will be compared, which results in an overall sense of livability for the neighbourhoods

Ethical considerations

Because this thesis utilizes a survey of residents, some ethical considerations are important to address. The researcher promises confidentiality, and makes sure the (personal) data is stored and handled safely, following the guidelines provided by the University of Groningen. The responses will be anonymized before use. These points are addressed in the survey before starting, the respondent gives consent to use the data and agree to the terms stated. See [Appendix A](#) for full statement.

Results

Architectonic vision of the municipality

In the section on spatial and functional aspects (Bestemmingsplan Vleuterweide, section 3.2.1, 2014), the document specifically refers to the building style and intended 'feeling of the area' of De Hoven as: 'village-style living'. This is to be achieved by incorporating a wide variety of different (architectonic) properties, narrow streets, squares, brinks and an intricate linkage to the surrounding landscape. The pursued atmosphere is described as: 'an atmosphere like we know from small and historic cities and villages (Gemeente Utrecht 2014). This intended outcome makes a direct link to the way the literature described New Urbanism; the municipality even uses the same vocabulary for this development. The vision of the municipality for this neighbourhood is thus for it to resemble the historic development but tailored for the needs and usage of today. Figures 5 to 8 give an impression of the new neighbourhood.



Figure 5, De Hoven. Source: Author



Figure 6, De Hoven. Source: Author



Figure 7, De Hoven. Source: Author



Figure 8, De Hoven. Source: Author



Figure 9, Binnenstad. Source: Author



Figure 10, Binnenstad. Source: Author



Figure 11, Binnenstad. Source: Author



Figure 12, Binnenstad. Source: Author

A few key differences can be observed when comparing the pictures from De Hoven and the Binnenstad. It is clear that the building density is higher in the Binnenstad, paired with narrower streets. It is apparent that the neighbourhoods were constructed in different time periods, De Hoven being the newer one.

The density of shops is very different between the two neighbourhoods. In the Binnenstad, shops are distributed throughout the area, located on nearly every street, whereas in the case of De Hoven, all shops are concentrated on the edge of the neighbourhood.

Survey, general

Table 2, Survey demographics

Description	Binnenstad	De Hoven
Classification	Historic city	New Urbanism
Demographics		
avg household size	2,8	3,4
Status		
<i>single</i>	36%	0%
<i>in a relationship</i>	64%	100%
Children		
<i>yes</i>	27%	60%
<i>no</i>	73%	40%
Age		
<i>21-29</i>	64%	20%
<i>30-65</i>	36%	80%
<i>65+</i>	0%	0%
Gender		
<i>male</i>	82%	60%
<i>female</i>	18%	40%
<i>other</i>	0%	0%
Work status		
<i>Student</i>	27%	0%
<i>Full time</i>	55%	20%
<i>Part time</i>	18%	60%
<i>Not employed</i>	0%	20%

Table 2 displays the demographic characteristics of survey respondents. The household size in De Hoven is slightly higher, and 100% of the respondents was in a committed relationship at the time of surveying. Most of the residents in De Hoven are at working age, whereas the distribution is more diverse in the Binnenstad.

Walkability

The map analysis on the walkability of both neighbourhoods on the accessibility and availability of basic services resulted is shown in figures 13 - 16. These specific services are chosen because they are the most frequently visited and are used in the survey conducted among residents. The circles have a radius of 400- meter, 800 meter and 1600 meter respectively. According to the 20-minute neighbourhood mentioned before, a 20 minute or 1600-meter walk is the average distance people are willing to walk (Merlin et al. 2021; Gower & Grodach 2022). Figure 13 shows that for the case of De Hoven, the entire area has walkable access to supermarkets, with almost all residents having to walk less than 10 minutes to reach the shops. For the case of de Binnenstad the same, if not better, accessibility to supermarkets is shown in figure 14. Most residents are within 400 meters, a 5-minute walk, of a grocery store. This is reflected in the survey responses (table 2), 100% of the respondents in both areas walks or cycles to the shops and services.

Average commuting distances are nearly identical in both cases, but they differ in mode choice, as displayed in table 2. Residents in De Hoven use the car more for commuting than residents in the Binnenstad. This could be because there are more offices and services located in the Binnenstad compared to De Hoven.

Table 3, Survey responses | travel behaviour

Walkability, transportation	Binnenstad	De Hoven
Transportation (Work)		
avg travel time (min)		
0-15 min	27%	20%
15-30 min	27%	40%
30-60 min	27%	20%
Work from home/no travel	18%	20%
Avg. travel distance (km)	16	15
mode: Car	9%	40%
mode: Bike/walking	36%	20%
mode: public transit	45%	20%
Work from home	9%	20%
Transportation (Shops/ Amenities)		
Avg. distance (meter)	490	410
mode: Car	0%	0%
mode: Bike/walking	100%	100%
mode: Public transport	0%	0%

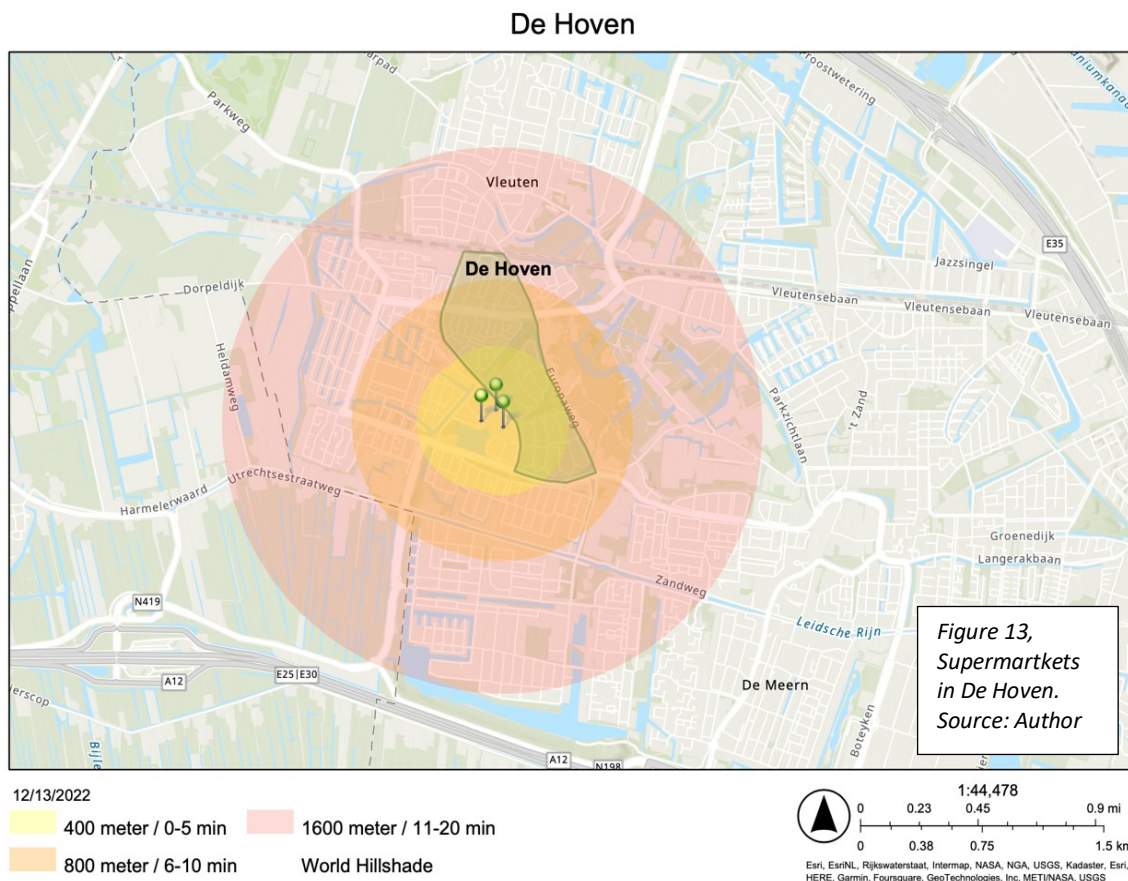
Perceived values by residents on walkability

Residents scored the indicators very high in both neighbourhoods (table 3). The walkability of the neighbourhood is underlined by the percentage of residents that walks or cycles to services and amenities; 100%. The average distance also is almost the same, with just an 80-meter gap.

Concluding, it is likely that the residents of the two compared neighbourhoods perceive the walkability of their neighbourhood, and the act of walking, as very good. No significant differences are observed between the two study areas.

Table 4 Survey responses | perceived values. Scale 0-5

Perceived values	Binnenstad	De Hoven
Safety	4,7	4,4
Comfort/ease	4,5	4,8
Enjoyment	4,9	5,0
Utility	4,5	4,6
Total score	18,6	18,8



Binnenstad

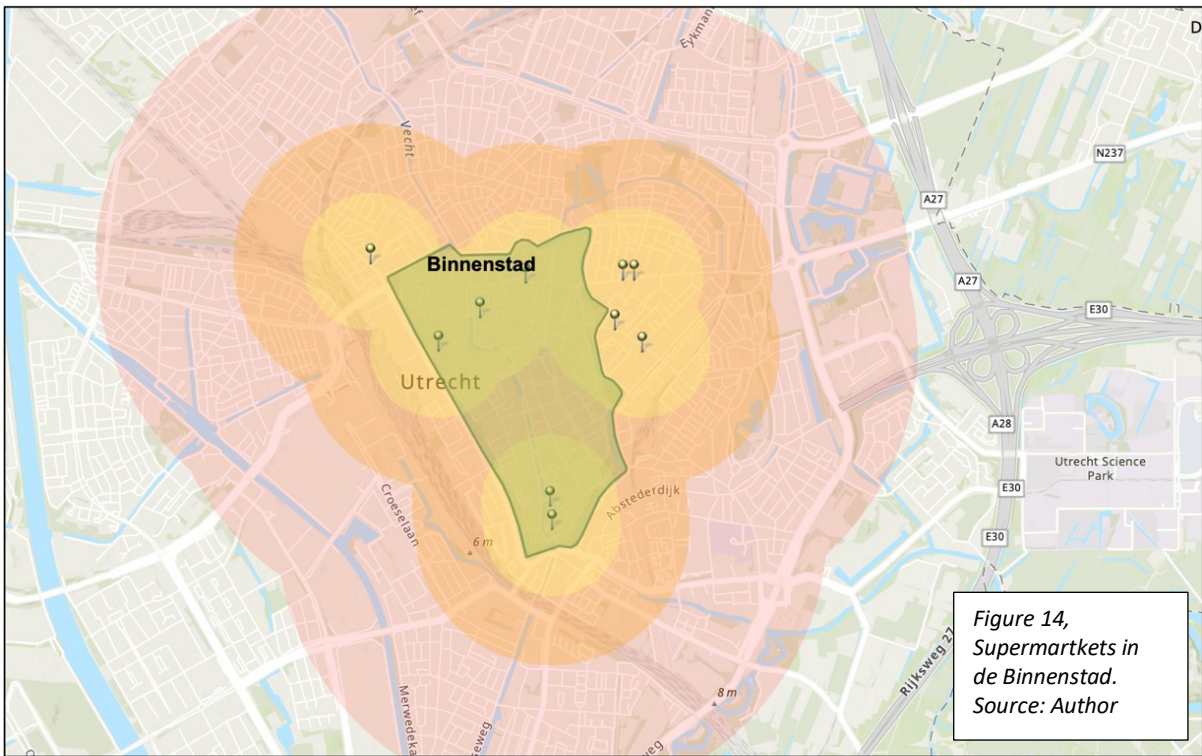
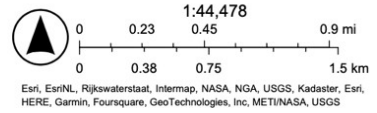


Figure 14, Supermarkets in de Binnenstad. Source: Author

12/13/2022

- Supermarkt
- 400 meter / 0-5 min
- 800 meter / 6-10 min
- 1600 meter / 11-20 min

World Hillshade



Esri, EsriNL, Rijkswaterstaat, Intermap, NASA, NGA, USGS, Kadaster, Esri, HERE, Garmin, Foursquare, GeoTechnologies, Inc. MET/NASA, USGS

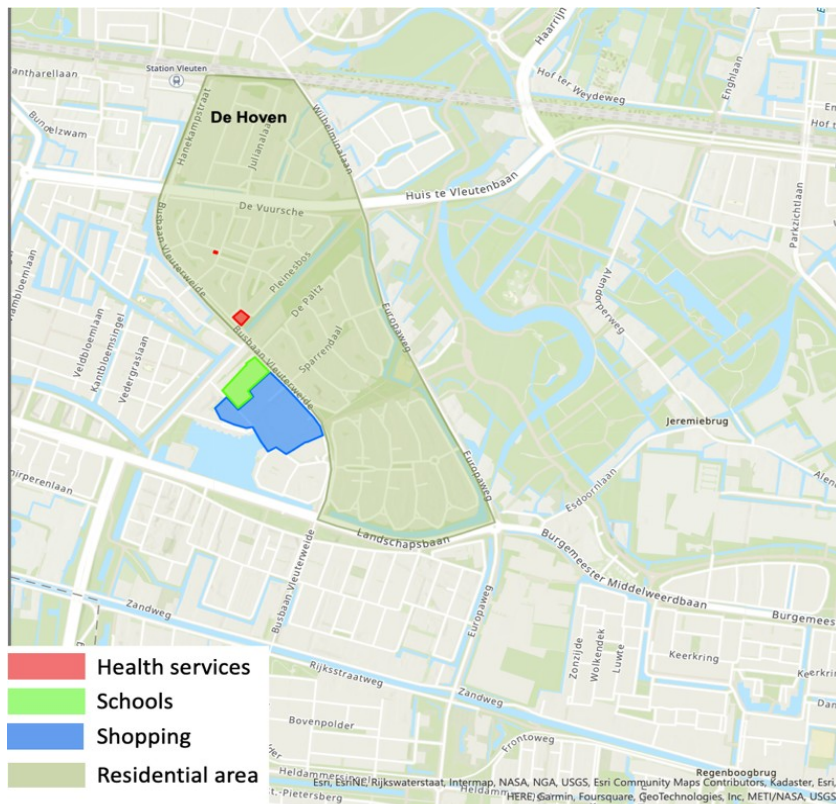


Figure 15, De Hoven services. Source: Author

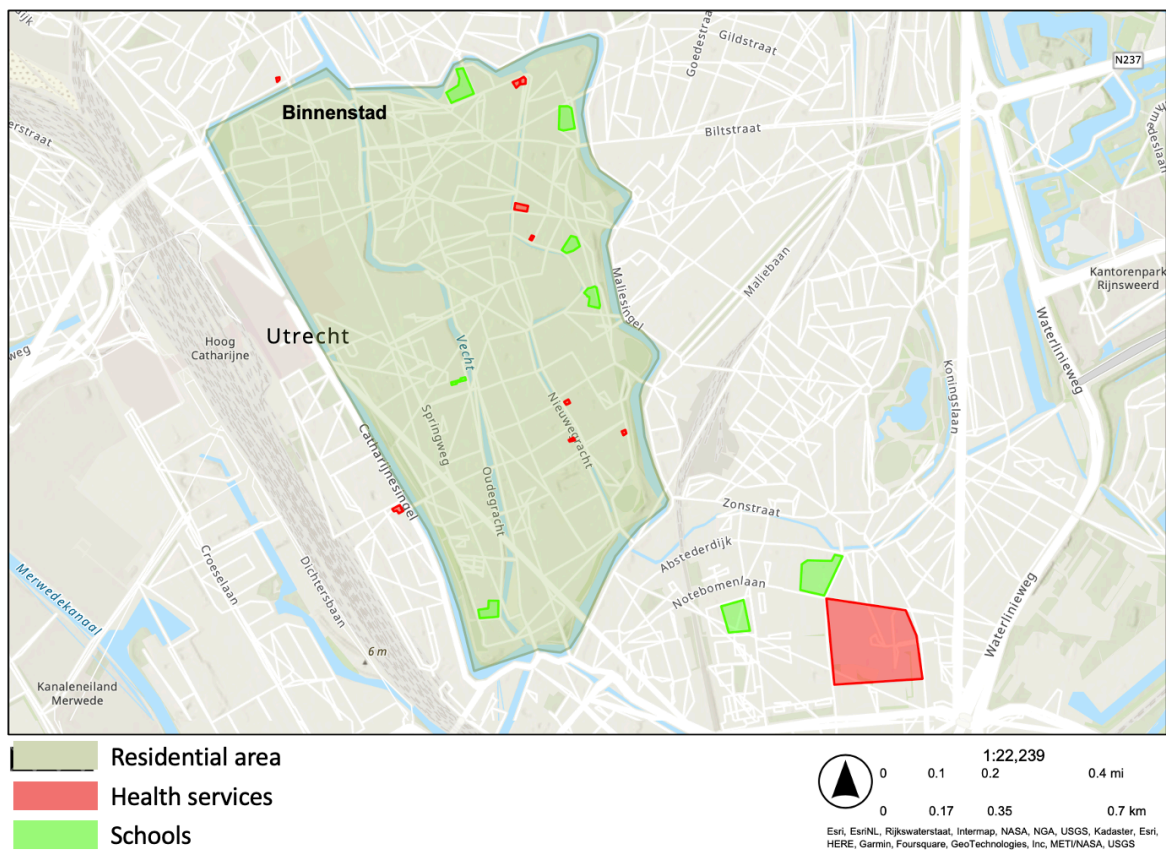


Figure 16, Binnenstad services. Source: Author

Sense of Place

The perception of sense of place as responded by the residents is displayed in table 4. ‘Sense of belonging’ was given an average of 4,4/5 in both neighbourhoods.

The connection to the area was marked slightly higher in De Hoven.

These results can be skewed because of the sampled residents, If the person has just moved to the area, it is likely that they have a less strong connection to it than someone who has lived there for all their life. Both the sense of belonging and connection are marked comparable across the two neighbourhoods, the perception of the expressed principles is thus the same

Table 5 Survey responses | Sense of Place. Scale 0-5

<i>Sense of place</i>	Binnenstad	De Hoven
Sense of belonging	4,4	4,4
Connection to area	3,1	3,8
<i>Interaction with neighbours</i>		
Daily	9%	0%
Several times a week	9%	60%
Weekly	27%	20%
Several times a month	46%	0%
Monthly	9%	20%
Never	0%	0%

Mixed Land-Use

Figures 15 and 16 display land use mix of basic amenities. Note on figure 16 that shops are not marked. To highlight all shops would lead to an unreadable map, as all sorts of shops are found nearly everywhere. This is in stark contrast to De Hoven figure 15, where the shops are concentrated and located at the edge of the neighbourhood. The diversity of shops is higher in the Binnenstad. Still, the shops are within the 800-meter radius and accessible on foot for the complete area. The survey respondents indicate that the majority share of their needed amenities are within walkable distance.

Overall, in the Binnenstad, the mix of land uses, residential and commercial, is better integrated, while in De Hoven, the land use is more separated. The walkability of the neighbourhoods and placement of the shops on the edge of the neighbourhood makes up for the lesser land use mix.

Table 6 Survey responses | Mixed Land-Use. Scale 0-5

Mixed land-use	Binnenstad	De Hoven
Share of amenities within walkable distance	4,7	4,4

Housing diversity

In the 'Woonvisie', a municipal policy document concerning housing, published in 2019, the municipality states that its striving for neighbourhoods with a mix of housing types, while being affordable and sustainable. The housing types being owner occupied, rental houses and social housing. The municipality is currently working on strongly increasing the share of social housing in both the Binnenstad and De Hoven, slightly increasing the rental supply and keeping the owner-occupied property the same. Table 6 displays the actual share of homeownership and the surveyed residents. Comparing the survey responses to the municipal data, shows that the ratio owner occupied/renters is the comparable to the municipal data, meaning a larger share of owner-occupied properties in De Hoven relative to the Binnenstad. No information relating to the share of social housing was publicly available. The ratio of owner-occupied housing to rental housing in the Binnenstad is close to 50/50, while there is a larger share of homeownership in De Hoven. Still the housing diversity as prescribed by the CNU is being complied with.

Table 7 Survey responses | Homeownership. (*UtrechtinCijfers 2022)

Homeownership	Binnenstad	De Hoven
<i>Survey responses</i>		
Owner occupied	36%	80%
Renting	64%	20%
<i>Municipal data*</i>		
Owner occupied	45%	64%
Renting (total)	52%	36%
<i>Renting form housing cooperation</i>	30%	20%
<i>Renting from private person</i>	22%	16%
Unknown	3%	0%

Conclusions

After taking these individual sections in account, we can conclude that the relationship between livability in historically designed urban areas and New Urbanist developments is that they are very similar in form of design, intention, and perceptions by residents. The two areas share several aspects of design, designing for walkable a neighbourhood, mixing uses of space instead of single use zoning by combining shopping and living, and housing diversity, in both form and ability to rent or buy. The architecture shares the principle of human scale design. Literature has described New Urbanism as 'old-villageism' and other terms conveying the same meaning, these findings back these statements, by including residents' opinions instead of only considering theoretical principles. The livability, considering the principles mentioned before and the way they are experienced by residents is very similar and overwhelmingly positive. Considering these findings, the hypothesis is partly rejected. The historic development and New Urbanist development share most of the design principles, *and* the perception of residents is almost identical. One recommendation that follows from this thesis, the fact that while the shops and restaurants in De Hoven are accessible on foot, the mixing of uses is very limited, this could be improved to increase the liveliness of the neighbourhood.

More research is necessary on the development of historic cities in this context, to find out what the implications are of this design but more importantly how these specific design choices were made.

Limitations

There are some shortcomings in this thesis, especially concerning the survey. The response rate is low, especially in De Hoven. Possible pitfalls are the time of surveying and willingness of people. Five walks of the neighbourhood were conducted, during working hours, which meant that most residents were out. Willingness to respond also proved to be an issue. About half the people approached were not interested in partaking in the research. Flyers with QR-codes for the survey were handed out (and promised to be completed when the person got home) and put up in the local library, these resulted in zero additional responses. Some survey questions are incorrectly designed and do not accurately reflect the underlying drivers for certain choices residents make. The answer options given for two questions are not useful, this is in the question about age, where age-bands were provided instead of an open question, and the same goes for commuting times. This produced unusable data.

The document collection for the case of De Hoven is straightforward, but in the case of the Binnenstad it's very complicated, as these documents are not digitalized in a useful way.

Concerning the theoretical background on the design of historic cities, this also is incomplete, there is little available academic published literature in this specific aspect.

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Appendix A – Survey

The survey is available in both Dutch and English.

Thank you for participating in this research! I appreciate your contribution. Your answers will support a bachelor thesis aiming to find out the relationship in perceived livability in historical areas and modern urban developments in the Netherlands. It takes about 10 minutes to complete the survey.

Participation

Participation in this research is voluntary. If you decide not to participate you do not have to give an explanation and there will be no negative consequences.

You can terminate participation at any time by closing your browser.

Objective

The objective of this study is to compare the perceived livability in a historical area and modern urban development by residents and users of the space. The survey will ask questions about experiences and perceived values of the participant about the area.

Data

The data will be treated according to the guidelines of the University of Groningen. Particularly, all data will be gathered, stored, and processed **anonymously** and carefully. No data will be shared with third parties.

Risks

There are no risks associated with participation to this study.

You may always ask questions about the research, during and after the survey is completed. You can do so by emailing h.j.eijssen@student.rug.nl, the author of the bachelor thesis.

I hereby declare that:

- I am 16 years or older.
- I have been informed about this research satisfactorily.
- I have read the information and understand what is expected from me and understood the information.
- I know that my participation is voluntary and have been informed about my rights.

- I understand that I can cancel my participation at any moment.
- I understand how my data will be processed and protected.
- I agree with the participation in this research.

Do you wish to participate?

Yes, I agree to participate → Go to section 1

No, I do not wish to participate → Go to section 6

1 Background information

What is your age?

- 16 – 20
- 21 – 29
- 30 – 65
- 65+
- N/A, No answer

What is your gender?

- Male
- Female
- Other
- N/A, No answer

What is your employment status?

- Full-time
- Part-time
- Student
- Not employed → Go to section 2c

What is your relationship status?

- Single, without children
- Single, with children
- In a relationship, without children
- In a relationship, with children
- N/A, No answer

What is your household size?

In numbers

Location and Housing

Which area do you live in?

De Hoven, Vleuterweide, Utrecht
De Binnenstad, Utrecht

Do you own the property you live in?

Yes
No I am renting
Other, please specify
N/A, No answer

2 Travel

Do you commute to work on a regular basis?

Yes → Continue
No → Go to section 2c

How long does your commute take on average?

0 – 15 minutes
15 – 30 minutes
30 – 60 minutes
60 – 120 minutes
120 - > minutes
N/A, I work from home

What is your average commuting distance?

In numbers, kilometers

What is your preferred mode of transport for your commute?

Car → Go to 2a
Bike → Go to 2b
Walking → Go to 2b
Public transport → Go to 2a
Other, please specify
N/A

2a Car/PT

What is the main reason you choose this mode?

Travel time
Convenience
Other, please specify

Would it be possible to cycle or walk to your workplace?

- Yes → Go to 2c
- No → Go to 2c

2b Cycling/Walking

What is the main reason you choose this mode?

- Travel time
- Convenience
- Other, please specify
- go to 2c

2c Activities

What is your preferred mode of transport for getting to activities, services and shops in your area?

- Car
- Bike
- Walking
- Public transport
- Other, please specify

What is the main reason you choose this mode?

- Travel time
- Convenience
- Other, please specify

3 Perceptions on walkability

Do you feel safe while walking in the neighbourhood?

- Not at all
- Slightly
- Somewhat
- Moderately
- Extremely

How practical is it for you to walk, compared to other modes of transport?

- Not at all
- Slightly
- Somewhat
- Moderately
- Extremely

In your opinion, are the pedestrian facilities like sidewalks and zebra crossings plentiful and in good shape?

- Not at all
- Slightly
- Somewhat
- Moderately
- Extremely

How pleasurable is walking in your neighbourhood?

- Not at all
- Slightly
- Somewhat
- Moderately
- Extremely

What is the distance you have to travel to get to the supermarket?

In numbers, kilometers

4 Perceptions on sense of place

'I feel at home in the neighbourhood'

How do you feel about this statement?

- Strongly agree
- Disagree
- Neither agree or disagree
- Agree
- Strongly agree

'I feel involved in the neighbourhood'

How do you feel about this statement?

- Strongly agree
- Disagree
- Neither agree or disagree
- Agree
- Strongly agree

How often do you interact with your neighbours?

- Daily
- Multiple times a week
- Once a week
- Multiple times a month
- Monthly
- Less than once a month

5

Mixed land-use

What percentage of amenities and services you frequent during a normal week are within cycling/walking distance of your home?

0 – 25 %

25 – 50 %

50 – 75 %

75 – 100 %

What changes would you make to the neighbourhood if it were up to you?

Open question

6

Closing statement

Thank you for participating!

If you have any questions, please contact the author via h.j.eijssen@student.rug.nl

You can now close this window.