ISTANBUL TECHNICAL UNIVERSITY ★ GRADUATE SCHOOL

GROWING IN MEGA CITY STREETS: ASSESSMENT ON CHILD-FRIENDLY STREET TRANSFORMATION IN ZUMRUTEVLER, ISTANBUL

M.Sc. THESIS

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İSTANBUL TEKNİK ÜNİVERSİTESİ ★ LİSANSÜSTÜ EĞİTİM ENSTİTÜSÜ

MEGA KENT SOKAKLARINDA BÜYÜMEK: İSTANBUL, ZÜMRÜTEVLER'DEKİ ÇOCUK DOSTU SOKAK DÖNÜŞÜMÜNE İLİŞKİN DEĞERLENDİRME

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Derya Koçaş, a M.Sc. student of ITU Graduate School student ID 519211024 successfully defended the thesis/dissertation entitled "GROWING IN MEGA CITY STREETS: ASSESSMENT ON CHILD-FRIENDLY STREET TRANSFORMATION IN ZUMRUTEVLER, ISTANBUL", which she prepared after fulfilling the requirements specified in the associated legislations, before the jury whose signatures are below.

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To my childhood,

FOREWORD

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June 2025

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ABBREVIATIONS

AMAT	**:** Agenzia Mobilità Ambiente Territorio (Mobility and Environment Agency)
BDP	**:** Building Design Partnership
BvLF	**:** Bernard van Leer Foundation
CFC	**:** Child-Friendly City
CFCI	**:** Child-Friendly Cities Initiative
CIM	**:** Children's Independent Mobility
GDCI	**:** Global Designing Cities Initiative
GUIC	**:** Growing Up in Cities
IMM	**:** Istanbul Metropolitan Municipality
ITC	**:** Infant, Toddler, and Caregiver-friendly
ITCN	**:** Infant, Toddler, and Caregiver-friendly Neighborhoods
ITDP	**:** Institute for Transportation & Development Policy
NACTO	**:** National Association of City Transportation Officials
PGT	**:** Piano di Governo del Territorio (Territorial Government Plan)
UN	**:** United Nations
UNESCO	**:** United Nations Educational Scientific and Cultural Organization
UNICEF	**:** United Nations International Children's Emergency Fund

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GROWING IN MEGA CITY STREETS: ASSESSMENT ON CHILD-FRIENDLY STREET TRANSFORMATION IN ZUMRUTEVLER, ISTANBUL

SUMMARY

The first moment children step out of their homes, they encounter streets, which are important building blocks that provide transportation and access in the city. In other words, streets, which are dominated by vehicles today and require pedestrians to walk carefully every day, both when they park and when they speed, are the first public areas where children experience the city. Children were significantly affected by rapid increase in urbanization and the decrease in the rate of open spaces and the right to play, one of the fundamental rights of children was taken away from them over time to experience this on the streets. The gradual decrease in the opportunity to play on the streets is also a reason why the concept of “child-friendly city” has recently started to gain importance. In addition to academic discourses and symposiums, the production of solutions that prioritize children's needs in cities and public spaces, which are also included in the policies, actions and promises of local and central governments, also reflects the importance and need of the issue. Although studies are conducted in different fields such as management, law and health on this issue, the subject of child-friendly cities will be addressed under the title of urban planning and urban design within the scope of the thesis. In this context, the relationship between children and play, which has an important role in child development, and public spaces was investigated. Then, the concept of "child-friendly cities" and its relations, as well as the child-friendly street transformation, which has significant visibility in the city, were investigated in the context of this concept.

Street transformations, which are an effective step towards making cities child-friendly, are included in the literature as an important and visible action that supports children's independent mobility. The fact that children can be freely on the streets again or can carry out their own transportation from one place to another on foot is beneficial for them to learn their risk assessment capacity with play and to develop it by experiencing the streets in the city. Initiating transformation in streets, which are public spaces dominated by vehicles and where children's visibility is reduced, is an action that will increase not only children's but also the general pedestrian accessibility and pedestrian visibility of the area, and therefore encourage pedestrian transportation and direct them to environmentally friendly transportation alternatives.

There are two different methods for child-focused street transformations. The first one, temporary street transformations provide safe play opportunities for children in the vicinity of their homes by closing the street to traffic for a certain period of time, such as a day or a few hours. This movement started with the Play Streets events in London and has become a type of street transformation that has spread worldwide in order to create activity and socialization opportunities around the home during the COVID-19 pandemic. Another child-focused street transformation alternative is included in the literature as permanent. When looking at child-friendly permanent street

transformations, it is common to use the tactical urbanism method as a tool. This method allows the area to be tested with low-cost materials and design before making irreversible decisions and moving on to permanent implementation. This method, which can also be called a two-phased street transformation, supports the applicability of revisions according to user reactions during the rehearsal phase; furthermore, it helps reduce the margin of error, strengthens the attractiveness of the area with the use of vibrant colors, flexible and creative urban furniture. This situation reminds that vehicle users should also be careful while passing through the area. It is important not only to provide attractiveness with colors, but also to meet the needs of children and their caregivers in every detail or relationship with the environment in the area, since the primary focus in these street transformations is children. In this sense, there are design guides prepared by states and some institutions regarding the upper-scale perspectives and child-friendly design details that need to be provided to create child-friendly environments.

In order to ensure that these changes are accepted by city residents while creating child-friendly areas and to continue to progress the design details in the transformations to be made according to a child-focused perspective, comprehensive strategies and realistic action plans for their implementation need to be developed. In this context, strategic plans and design guides prepared with a child focus are important pathfinder in transformation processes. Within the scope of the thesis, child-focused design guides, which constitute a part of the research method, were also compiled as a guide to investigate the answers to the thesis research questions, and the evaluation scale was determined from this compilation according to the parameters that will guide the thesis study area from here.

This thesis examines whether environments resulting from two-stage child-friendly street transformations maintain their child-centered character following permanent implementation. The thesis aim is structured around two interrelated components to provide a more systematic framework. The first component seeks to determine whether spaces that have undergone a two-phase design process can truly be considered child-friendly. The second component questions the long-term sustainability of the child-friendly identity in the permanent phase of these transformations. In this context, the thesis aims to identify the criteria that must be considered during both the decision-making and implementation processes of child-friendly street transformations, and to understand the potential obstacles that may hinder the fulfillment of these criteria.

The child-friendly street transformation implemented in Zümrütevler neighborhood, which is the fourth most densely populated neighborhood in Istanbul, is the first child-friendly street transformation implemented in a metropolitan city like Istanbul. The implementation here was completed in two phases as a rehearsal implementation and permanent implementation. This implementation, which is located in the north of the E-5 corridor, which is an important threshold of Istanbul and has the fourth most densely populated neighborhood, was determined as the study area in the thesis research because it is the first child-friendly street transformation in Istanbul and the first application that includes a rehearsal implementation. The process of the street transformation completed in Zümrütevler neighborhood and the sustainability of its child-friendly character after the permanent implementation are discussed in the study.

Five research questions have been defined that will point to the purpose and components of the thesis and form the skeleton of the research method: (1) What methods can be used to measure the child-friendliness of two-stage street

transformations, and how do they vary across urban scales? (2) What criteria must be met for public open spaces to be considered child-friendly, and how do these criteria vary across different urban scales? (3) How do planning decisions made at different urban scales influence the spatial use of child-friendly street transformation projects? (4) To what extent do permanently implemented, phased child-friendly transformations maintain their child-friendliness when assessed through user behavior and established criteria? (5) How can the long-term sustainability of spaces transformed through a child-friendly design approach be ensured within the framework of child-friendly urbanism?

The objectives of the thesis have been determined as follows within the scope of the research questions: (1) Define criteria and methods for each transformation phase. (2) Analyze how decisions affect spatial use and child-friendliness. (3) Investigate the effectiveness and adaptability of the phased design approach. (4) Examine how user behaviors reflect the success or limitations. (5) Propose strategic recommendations.

An original evaluation scale has been prepared by bringing together and blending the parameters in the design guides compiled in the literature review within the scope of the study methodology. A separate study has been conducted on which criteria should be considered regarding how the prepared evaluation scale will be used for the study area, and which areas require what kind of measurements. In this context, the necessary analyses were conducted to evaluate the street transformation process, neighbourhood scale and design details of the Zümrütevler Square, which is the study area, at three different scales. Likewise, user behaviors and pedestrian movements were observed in order to analyze the use of the area together with the results to be obtained from the evaluation scale and to obtain more meaningful results.

The study results reveal that the parameters emphasized in the design guides, in some cases, do not significantly affect the functionality or usage style of the area, depending on the need and character of the area. Although the parameters in the evaluation scale are designed with a focus on children, it has been determined as a result of the observations that the area has become very useful especially for older individuals. This determination also leads to the conclusion that design for children is design for everyone. In some cases, which were evaluated according to the parameters and found not to meet the criteria, it has been determined that pedestrians act according to the ideal in the design criteria. In addition, it has been observed that the use of public space in the parts where the criteria are met is realized as planned.

This study, together with the literature review, research method and the obtained results, has discussed in detail the final results of the application taken for the purpose of child-friendly street transformation. It has reinforced the objective evaluation method with observations made in the field by re-evaluating the outputs based on design criteria and the usage and movement patterns in the area.

MEGA KENT SOKAKLARINDA BÜYÜMEK: İSTANBUL, ZÜMRÜTEVLER'DEKİ ÇOCUK DOSTU SOKAK DÖNÜŞÜMÜNE İLİŞKİN DEĞERLENDİRME

ÖZET

Çocuklar kentlerde toplumun en minik bireyleri olarak sokakları, meydanları, parkları deneyimlemektedirler. Evden adımlarını attıkları ilk anda kentte ulaşımı ve erişimi sağlayan önemli yapı taşı olan sokaklarla karşılaşmaktadırlar. Yani, günümüzde araçların hakim olduğu gerek park etmeleri sebebiyle gerek hız yapmaları sebebiyle yayaların her gün dikkatli yürümelerini gerektiren sokaklar, çocukların kentte ilk deneyimlendikleri kamusal alanlardır. Günümüzde sokaklardaki hakimiyet çoğunlukla araçlarda ve araç sahiplerinde de olsa, yaklaşık 30 yıl öncesine kadar kentlerde durum böyle değildi. Zamanla ve kentleşmenin hızlı artışıyla birlikte şehirlerdeki açık alan oranları azalmaya başlamış ve sadece çocukların değil toplumdaki her bireyin çevre ile etkileşim kurma biçimleri değişmiştir. Bu değişimden önemli ölçüde etkilenen çocukların temel haklarından biri olan oyun hakkı ve sokaklarda bu hakkı deneyimleme şansları zamanla ellerinden alınmıştır. Sokaklarda oyun imkanının giderek kaybolmasının da etkisiyle son zamanlarda "çocuk dostu şehir" kavramı önem kazanmaya başlamıştır. Akademik söylemler ve sempozyumlar haricinde yerel ve merkezi yönetimlerin de politikalarında, eylemlerinde ve vaatlerinde yer alan çocuk ihtiyaçlarını kentlerde ve kamusal alanlarda öncelikleyen çözümler üretilmesi konunun önemini ve ihtiyaç durumunu da yansıtmaktadır. Bu konuya ilişkin yönetim, hukuk, sağlık gibi farklı alanlarda çalışmalar yapılsa da bu tez çalışması kapsamında çocuk dostu şehirler konusu şehir planlama ve kentsel tasarım başlığında ele alınacaktır. Bu bağlamda, ilk olarak çocuklar ve çocuk gelişiminde önemli payı olan oyun ile kamusal alanlar arasındaki ilişkiler araştırılmıştır. Devamında "çocuk dostu şehirler" kavramı ve bileşenleri ile birlikte, bu kavram bağlamında kentte pratikte karşılık bulan bir yaklaşım olan çocuk dostu sokak dönüşümü araştırılmıştır.

Kentlerin çocuk dostu olması yolunda etkili bir adım olan sokak dönüşümleri, çocukların bağımsız hareketliliğini destekleyen önemli ve görünür bir aksiyon olarak literatürde yer almaktadır. Sokaklarda çocukların yeniden özgürce bulunabilmesi ya da bir yerden diğerine ulaşımını yaya olarak kendilerinin gerçekleştirebilmesi, risk tayin etme kapasitesini oyun ile birlikte öğrendikleri gibi kentte sokakları deneyimleyerek de geliştirmelerinde de yararlı olmaktadır. Özellikle araçların domine ettiği ve çocukların görünürlüğünün azaldığı kamusal alanlar olan sokaklardan dönüşümü başlatmak sadece çocuklar için değil, bölgenin genel yaya erişilebilirliğini ve yaya görünürlüğünü artıracak ve bu sebeple yaya ulaşımını teşvik edip çevre dostu ulaşım alternatiflerine yönlendirecek bir eylemdir.

Günümüzde çocuk odaklı sokak dönüşümlerinde geçici ve kalıcı olmak üzere iki farklı yöntemden söz edilmektedir. Geçici sokak dönüşümleri, bir gün ya da birkaç saat gibi belirli bir süreliğine sokağın trafiğe kapatılarak çocuklar için evlerinin yakın çevresinde güvenli oyun imkanı sunmaktadır. Bu hareket Londra'daki Oyun Sokakları

(Play Streets) etkinlikleri ile başlamış olup COVID-19 pandemi döneminde insanların bulundukları alandan çok uzaklaşmamaları gerektiği için konut çevresinde etkinlik ve sosyalleşme imkanları yaratmak adına dünya çapında yayılan bir sokak dönüşüm çeşidi olmuştur. Bir diğer çocuk odaklı sokak dönüşümü alternatifi kalıcı olarak gerçekleştirilen olarak literatürde yer almaktadır. Çocuk dostu kalıcı sokak dönüşümlerine bakıldığında taktiksel şehircilik yönteminin bir araç kullanılması yaygındır. Bu yöntem geri dönüşü olmayan kararlar verip kalıcı uygulamaya geçmeden önce, düşük maliyetli malzemeler ve tasarımla alanın test edilmesine olanak sağlamaktadır. İki aşamalı sokak dönüşümü olarak da isimlendirilebilecek bu yöntem, prova aşamasında kullanıcılar tepkilerine göre revizyonların uygulanabilirliğini desteklemektedir. Hata payının azaltılmasında da yardımcı olan bu yöntem, canlı renklerin, esnek ve yaratıcı kent mobilyalarının kullanımıyla alanda çekiciliği güçlendirmektedir. Bu durum araç kullanıcılarının da alandan geçerken dikkat etmeleri gerektiğini hatırlatmaktadır. Sadece renklerle çekicilik sağlamak değil, bu sokak dönüşümlerinde öncelikli odak çocuk olduğu için alandaki her bir detay ya da çevre ile ilişkilerde de çocukların ve bakım verenlerinin ihtiyaçlarının karşılanıyor olması önemlidir. Bu anlamda çocuk dostu çevreler yaratmak için sağlanması gereken üst ölçek bakış açılarına ve çocuk dostu tasarım detaylarına ilişkin, devletler ve bazı kurumlar tarafından hazırlanmış tasarım rehberleri bulunmaktadır.

Çocuk dostu alanlar yaratırken bu değişimlerin kent sakinleri tarafından kabul görmesini sağlamak ve yapılacak dönüşümlerdeki tasarım detaylarının çocuk odaklı bakış açısına göre ilerlemesini sürdürmek için kapsamlı stratejiler ve bunların gerçekleştirilebilmesi için gerçekçi eylem planları geliştirilmesi gerekmektedir. Bu bağlamda, çocuk odaklı hazırlanan stratejik planlar ve tasarım rehberleri dönüşüm süreçlerinde önemli yol gösterici olmaktadırlar. Tez kapsamında literatür taraması içinde yer alan çocuk odaklı tasarım rehberleri tezin amacına yönlendiren araştırma soruları için araştırma yöntemi olmuştur. Bu rehberlerdeki parametrelerin derlenmesiyle birlikte çalışma alanının değerlendirilmesinde kullanılacak kriterler belirlenmiştir.

Tez, iki aşamalı olarak gerçekleştirilen çocuk dostu sokak dönüşümlerinin kalıcı uygulama sonrasında ortaya çıkan çevrenin hala çocuk odaklı olarak sürdürülebilirliğini sorgulamaktadır. Tezin bu amacı iki bileşende değerlendirildiğinde daha sistematik bir iskelete yönlendirmektedir. Bu bileşenlerden biri çocuk dostu mekan yaratmak için iki aşamalı tasarım süreci deneyimleyen yerlerin çocuk dostu olup olmadığını ortaya çıkarmakken; diğer bileşen, aşamalı sokak dönüşümlerinin kalıcı halinde çocuk dostu kimliğinin sürdürülebilirliğini sorgulamaktır. Bu bağlamda, çocuk dostu sokak dönüşümlerinde karar verme sürecinde ve uygulama sürecinde hangi kriterlerin dikkat edilmesi gerektiğinin anlaşılması ve bu parametrelerin gerekliliklerinin yerine getirilmesinde önlerindeki olası engellerin anlaşılabilmesi amaçlanmaktadır.

İstanbul'un dördüncü en yoğun çocuk nüfusuna sahip mahallesi, Zümrütevler mahallesinde uygulanan çocuk dostu sokak dönüşümü İstanbul gibi bir metropol kentte hayata geçirilen ilk çocuk dostu sokak dönüşümüdür. Buradaki uygulama, prova uygulaması ve kalıcı uygulama olarak iki aşama ile tamamlanmıştır. İstanbul'un önemli bir eşiği olan E-5 koridorunun kuzeyinde yer alan ve dördüncü en yoğun çocuk nüfusuna sahip mahallesindeki bu uygulama, İstanbul'daki ilk çocuk dostu sokak dönüşümü olması ve ilk prova uygulamasını içeren uygulama olması sebebiyle, tez araştırmasında çalışma alanı olarak belirlenmiştir. Çalışmada çocuk dostu sokak

dönüşümü olarak tamamlanan Zümrütevler Meydanı'nın süreci ve kalıcı uygulamadan sonra da çocuk dostu karakterinin sürdürülebilirliği tartışılmaktadır.

Tez amacına ve bileşenlerine işaret edecek ve araştırma yönteminin iskeletini oluşturacak beş araştırma sorusu tanımlanmıştır: (1) İki aşamalı sokak dönüşümlerinin çocuk dostu olup olmadığını ölçmek için hangi yöntemler kullanılabilir ve bu yöntemler kentsel ölçekler arasında nasıl farklılık gösterir? (2) Kamusal açık alanların çocuk dostu olarak kabul edilebilmesi için hangi kriterler karşılanmalıdır ve bu kriterler farklı kentsel ölçeklerde nasıl değişiklik gösterir? (3) Farklı kentsel ölçeklerde alınan planlama kararları, çocuk dostu sokak dönüşüm projelerinin mekânsal kullanımını nasıl etkiler? (4) Kademeli olarak kalıcı şekilde uygulanan çocuk dostu dönüşümler, kullanıcı davranışları ve belirlenmiş kriterler çerçevesinde değerlendirildiğinde çocuk dostu niteliklerini ne ölçüde korumaktadır? (5) Çocuk dostu tasarım yaklaşımıyla dönüştürülen mekânların uzun vadeli sürdürülebilirliği, çocuk dostu kentleşme çerçevesinde nasıl sağlanabilir?

Araştırma soruları kapsamında tezin hedefleri şu şekilde belirlenmiştir: (1) Her bir dönüşüm aşaması için kriterleri ve ölçüm yöntemlerini tanımlamak. (2) Alınan kararların mekânsal kullanım ve çocuk dostuluğu üzerindeki etkilerini analiz etmek. (3) Aşamalı tasarım yaklaşımının etkililiğini ve uyarlanabilirliğini araştırmak. (4) Kullanıcı davranışlarının, uygulamanın başarısını ya da sınırlılıklarını nasıl yansıttığını incelemek. (5) Stratejik öneriler geliştirmek.

Çalışma metodolojisi kapsamında literatür taramasında derlenen tasarım rehberlerindeki parametreler bir araya getirilip harmanlanarak yeni bir değerlendirme ölçeği hazırlanmıştır. Hazırlanan değerlendirme ölçeğinin çalışma alanı için nasıl kullanılacağına ilişkin hangi kıstaslara bakılması gerektiği, hangi alanların, nasıl ölçümler gerektirdiğine dair ayrıca bir çalışma yapılmıştır. Bu bağlamda, çalışma alanı olan Zümrütevler Meydanının üç farklı ölçekte olmak üzere dönüşüm süreci, mahalle ölçeği ve tasarım detaylarının değerlendirilebilmesi için gerekli analizler yapılmıştır. Değerlendirmenin daha kapsamlı bir açıya genişletilmesi için alanın kullanımını analiz etmek amacıyla kullanıcı davranışları ve yaya akışları gözlemlenmiştir.

Çalışma sonuçları, tasarım rehberlerinde vurgulanan parametrelerin, bazı durumlarda alan ihtiyacı ve karakterine bağlı olarak, alanın işlevselliği veya kullanım biçimini önemli ölçüde etkilemediğini ortaya koymaktadır. Değerlendirme ölçeğindeki parametreler çocuk odaklı tasarlansa da gözlemler sonucunda alanın özellikle yaş almış bireyler için çok kullanışlı hale geldiği tespit edilmiştir. Bu tespit de çocuk için tasarımın herkes için tasarım olduğu sonucuna tekrar götürmektedir. Parametrelere göre değerlendirilen ve kriteri sağlamadığı tespit edilen bazı durumlarda yayaların tasarım kriterindeki ideale göre hareket ettiği tespit edilmiştir. Bunun yannda, kriterlerin sağlandığı kısımlarda kamusal alan kullanımının planlandığı gibi gerçekleştiği gözlemlenmiştir.

Bu çalışma, literatür taraması, araştıma yöntemi ve elde edilen sonuçlarıyla birlikte çocuk dostu sokak dönüşümü amacıyla adım atılan uygulamanın nihai sonuçlarını detaylı bir şekilde ele almıştır. Tasarım kriterlerine dayalı çıktılarıyla alandaki kullanım ve hareket dokularına göre çıktılarının birlikte yeniden değerlendirmesini yaparak alanda yapılan gözlemler ile birlikte objektif değerlendirme yöntemini pekiştirmiştir.

1. INTRODUCTION

In the rapidly evolving urban landscapes of the 21st century, the well-being and development of children are increasingly central to urban planning. By 2030, it's estimated that 60% of the global population will be under the age of 18, making it crucial for cities to accommodate the needs of this significant demographic. Urban environments play a pivotal role in shaping children's experiences and development, with accessible spaces for play being essential for their physical and mental health.

As our cities become more dense and open spaces more valuable, the question of where children will play is becoming increasingly important in city planning to ensure their well-being and improve societal quality. In recent years, with changes in home and neighborhood environments in many cities, children's outdoor spaces have been shrinking, and the way they interact with their surroundings is also changing. In the early 20th century, having spaces for children to run and play was of great importance, and while this need remains today, it has become even more challenging to meet. Welsh Assembly stresses the importance of play for children with its supportive help for development of kids' physical, social, psychological and creative skills, and they underline that every community should support every opportunity for play and create playful environments to encourage (2002).

The concept of a "child-friendly city" has gained considerable traction in recent years, frequently highlighted in academic discourse, symposiums, and municipal agendas as a hallmark of urban quality and livability. This paradigm advocates for urban spaces that are not only safe and accessible for children but also enriching and supportive of their physical, cognitive, and social growth. Consequently, local governments around the world are increasingly adopting policies and strategies aligned with this framework, seeking to transform their urban environments into nurturing habitats for the younger generation.

Architects and urban designers increasingly emphasize the importance of considering children's needs and daily experiences in the urban agenda and design details,

acknowledging that any city or district that disregards the needs of children will inevitably disappoint the younger population in that area (Krysiak, 2020). Providing opportunities for children's independent mobility, safe play in open spaces, facilitating various social interactions, and fostering a sense of belonging for the youngest residents who experience the city daily has become a priority for designers, architects, and urban planners. Krysiak emphasizes the significance of considering children and their needs in urban design and planning processes with the author George Monbiat's statement that when children are not observed, they are left outside the city, and this means that children, who are important actors in the city, are deprived of many opportunities (2020). Not only the professions, but also local and central governments are highlighting this subject with focusing on creating child-friendly environments in their strategic plans and their design guidelines.

One key strategy in this movement is the transformation or pedestrianization of streets, which are the first public places where children experience urban life and vital spaces for children's daily activities. These transformations, whether temporary or permanent, aim to prioritize children's needs by reducing traffic, increasing safety, and creating more engaging environments for play. The process often utilizes tactical urbanism, allowing cities to test and refine interventions that enhance urban quality for all, especially children. Tactical urbanism method for child-friendly street transformation is a tool as the first phase of these kind of projects, that allows to make a rehearsal of any transformation on the streets before their permanent change. This rehearsal process provides the advantage to see the reaction of people, pedestrians, vehicle drivers, cyclists and children before taking radical actions.

The first example of street transformation projects implemented with a two-phased design strategy in Türkiye is the transformation of Zümrütevler Square (Gürdoğan et al., 2022). Before the project, this area, which was completely dominated by vehicles, greatly restricted pedestrian access. With the transformation, the area was transformed into a square and made open to pedestrians. This project is also important in terms of being implemented in a densely populated megacity like Istanbul, especially in one of the most crowded neighborhoods. In cities like Istanbul, where public open spaces are insufficient and under the pressure of dense construction, such transformation projects offer the city a chance to breathe. At the same time, they remind people that real city dwellers are people and that a city can be discovered by walking and spending time in

open spaces. In cities where long-term construction and vehicle-oriented planning are dominant, such two-phased design projects that encourage mobility instead of vehicle use habits can be an effective method for cities to become livable again. Projects implemented with this approach aim not only to transform physical spaces, but also to change social habits and perceptions of space. This two-phased process, which begins with temporary or low-cost interventions, evolves into permanent solutions by shaping the needs of users. Thus, while public participation and feedback become a part of the process, the chance of success of the design also increases. The fact that vulnerable groups such as children, the elderly and individuals with limited mobility can find more space in public spaces also offers an important gain in terms of urban equality. Such transformation projects open the door to urban improvement not only physically but also socially.

Along with the benefits of two-phased design strategies, there may be deviations from the main idea of the design in the second stage, which is the transition to permanent implementation. Due to revisions in the first stage or due to the negativities caused by the regulation in the transition to permanent implementation, significant changes may occur in the projects, and even steps may be taken back. In this sense, the sustainability of two-phased design strategies is debatable and should be reviewed with the evaluations after permanent implementation.

1.1 Purpose of the Thesis

The aim of this thesis is to assess whether the environments and streets transformed through a phased design approach result in sustainably child-friendly spaces once permanently implemented. This aim is divided into two different components; the research questions formed under these two components constitute the methodological framework of the thesis. One of the components is to reveal the child-friendliness of those places which experienced two-phased design process in order to create child-friendly space. In this sense, criteria to evaluate have been determined at different scales in order to determine how the decisions between scales, which constitute an important part of planning theories, are implemented. At the same time, it has been determined with which methods these criteria will be evaluated. Another component is to question the sustainability of child-friendly spaces where phased street transformations have been realized in a permanent state. In this sense, apart from

measurable criteria, the evaluation of the current situation together with the users and their behaviors has been taken as basis. The questions that guide the thesis in achieving its purpose and shape the methodological framework of the thesis were determined. These questions are defined as follows:

- What can be the methods to measure child-friendliness of two-phased street transformations? How do the methods differ at different urban scales, from the decision-making process to the final result?
- What needs to be met in order to call public open spaces in the city "child-friendly"? Can a list of criteria be prepared? How do these criteria differ at different urban scales?
- How do decisions taken at different scales in child-friendly street transformation processes affect the use of space?
- Can child-friendly areas transformed with a phased design approach still be considered child-friendly once they become permanent, when evaluated in terms of user behavior and determined criteria?
- How can the sustainability of areas transformed with a child-friendly design approach be ensured in the context of "child-friendly"?

Based on defined research questions, the objectives of the thesis are detailed as follows:

- To develop a multi-scalar evaluation framework that enables the assessment of child-friendliness in street transformation projects implemented with a phased design approach. This includes identifying appropriate criteria and methods specific to each transformation phase such as decision-making, environmental relations, design detail.
- To analyze how decisions taken at various stages and scales of the transformation process influence the spatial characteristics of child-friendly environments, with a particular focus on how these decisions impact children's use of space.
- To investigate the effectiveness and adaptability of the phased design approach in creating sustainable child-friendly spaces, particularly after the transition from temporary to permanent use.

- To understand how user behaviors reflect the success or limitations of child-friendly street interventions, by examining patterns of use before, during, and after transformation stages.
- To propose strategic recommendations for future planning and design processes that aim to create and sustain child-friendly public spaces through phased, participatory, and context-sensitive approaches.

To answer these questions and reach the objectives of the research, the thesis will investigate whether the design and implementation of the transformation projects align with established child-friendly urban design principles. Additionally, it will assess whether the finalized transformations, now in permanent application, continue to meet the requirements and expectations of child-friendly spaces, including factors such as safety, accessibility, and suitability for children's activities. In this context, the thesis aims to reach out the suitability of the design details of the study area in accordance with the parameters of child-friendly streets and to observe the behavioral activities of the target users with the case study. Through these investigations, the thesis aims to provide a comprehensive evaluation of the success and challenges of these two-phased child-friendly street transformations, contributing to the broader discourse on child-friendly urban design approach.

1.2 Scope of the Thesis

This thesis examines street transformations and pedestrianization as key urban policies implemented in metropolitan cities to create child-friendly urban environments. These interventions—whether temporary or permanent—aim to enhance public spaces by making them safer, more accessible, and of higher quality for children. Within this context, the thesis addresses the negative impacts of car-dominated urban design on children's independent mobility, play rights, and overall well-being, while exploring how child-centered street transformations can offer solutions to these challenges. In line with the purpose and research questions, the scope of this thesis encompasses both theoretical and practical dimensions of child-friendly street transformations implemented through a phased design approach.

The thesis begins by addressing the challenges and opportunities related to children's experiences in urban environments, raising concerns about whether today's cities,

despite offering access to technology and entertainment, support their mobility, independence, and overall well-being. Then, it focuses on the vital role of public spaces, particularly streets, in providing children with their first experiences outside their homes. It emphasizes the importance of play for children's development and highlights various initiatives aimed at ensuring cities meet the rights and needs of children by providing safe streets, play opportunities, and accessible green spaces. In this context, the thesis presents a child-centered approach to urban design that fosters safer, more inclusive cities where children can thrive.

The explanation of child-centered street transformation presents different types of street interventions that support children's presence in public spaces. Temporary and permanent street designs that prioritize safety, mobility, and play are examined. These transformations prioritize safety, mobility, and play, and aim to create child-friendly environments that support active, social, and safer spaces for children.

Some of the cities that have applications regarding child-friendly city strategies and spatial transformations have been investigated in this thesis in order to understand the perspective of local governments. International design guides that guide the design of child-friendly streets that will guide the answers to the thesis research questions and then the aim of the thesis have been discussed. By examining 5 different guides prepared by different institutions and organizations, design approaches adopted in different countries have been compared and the basis of the evaluation criteria to be used in the thesis has been formed. In this way, the applications of child-friendly design in various contexts are understood and the field analysis is directed.

The part titled “Research Methodology and Case Study” presents the unique research method developed for the thesis. The methodology outlines the evaluation criteria used at different scales—decision-making, neighborhood, and design detail. A case study is conducted in the Zümrütevler neighborhood in Istanbul’s Maltepe district, which was selected due to its high child population. The transformation project in this area is described.

Drawing on interviews with key stakeholders, spatial analyses, and observational studies, the chapter including the analyses examines the impact of the transformation on the area and assesses the extent to which child-friendly design objectives were achieved. The evaluation of the transformation project included analyses of the area at

various scales according to the criteria specified in the methodology section, including transformation process, neighborhood-level impacts and design detail evaluations. In addition, pedestrian movements in the area and the axes on how users use the area most were analyzed. Finally, the chapter evaluation synthesizes the findings to provide a comprehensive evaluation.

The conclusion section highlights the contribution of the original research methodology. It discusses how child-centered street transformations can foster more livable, safe, and inclusive cities and proposes design recommendations based on the layered evaluation of the case study. In this context, the thesis is positioned as both an analytical and practice-oriented contribution to the discourse on child-friendly urban design. It aims not only to assess the effectiveness of current practices but also to guide future planning, design, and policy efforts toward more inclusive and sustainable urban environments for children.

1.3 Method of the Thesis

The case study of this thesis, which aims to evaluate the sustainability of child-friendly street transformations implemented through a phased design approach, was selected from one of the neighborhoods in Istanbul—a megacity with a notably high density of child population. The selected project was implemented in the Zümrütevler neighborhood of Maltepe district and introduced the first public square of the neighborhood. Prior to the intervention, the site lacked any elements that addressed pedestrian or child needs. This project represents the first two-phase child-friendly street transformation application in Turkey.

To assess this transformation, a comprehensive literature review was conducted to form the conceptual framework and guide the development of evaluation criteria. The criteria needed for the assessment of the area were derived from child-friendly street design guidelines published by five different institutions from various countries, reflecting a diverse set of international perspectives. Relevant criteria concerning child-friendly street transformations were extracted and adapted from these sources. In order to enable multiscalar analysis, the criteria were organized according to different spatial scales. Based on this categorization, the study evaluates the project site across three levels: the transformation process, the immediate surroundings of the project, and the spatial design details within the project area.

The materials to be analyzed and the corresponding methods of analysis were determined in alignment with the selected evaluation criteria. Data collection methods included document review, interviews with key stakeholders, on-site measurements, counts, and observational studies. For the assessment of the design and transformation process, both archival documents and interviews conducted with project coordinators were utilized.

The evaluation of the project's nearby environment focused on the spatial distribution and accessibility of relevant urban amenities, such as green spaces, educational facilities, and health facilities. Accessibility analyses were conducted by mapping the locations and measuring walking distances to these amenities. Additionally, traffic density assessments for both vehicles and pedestrians were carried out using field observations and insights gathered from stakeholder interviews. Based on current land use, a vitality analysis was also conducted to evaluate the vibrancy of the area surrounding the project.

Observational studies, measurements and counts were carried out to evaluate the existence and effectiveness of the basic design elements with the version after permanent implementation. Furthermore, user behavior was systematically observed, counted, measured and documented through photography in order to understand the density and diversity of use within the area.

The thesis introduces a unique methodological approach by adapting multiscalar criteria to a specific site and combining spatial analysis with qualitative methods such as stakeholder interviews and behavioral observations. Through assessing a critical project for Istanbul's child-friendly perspective, this thesis bridges a methodological gap in the child-friendly street literature. It offers an innovative framework for evaluating small-scale urban interventions in terms of their contribution to child-friendly environments and provides a replicable model for similar studies in other dense urban settings. The methodology applied in line with the thesis's aim, research questions, and objectives is summarized in Figure 1.1.

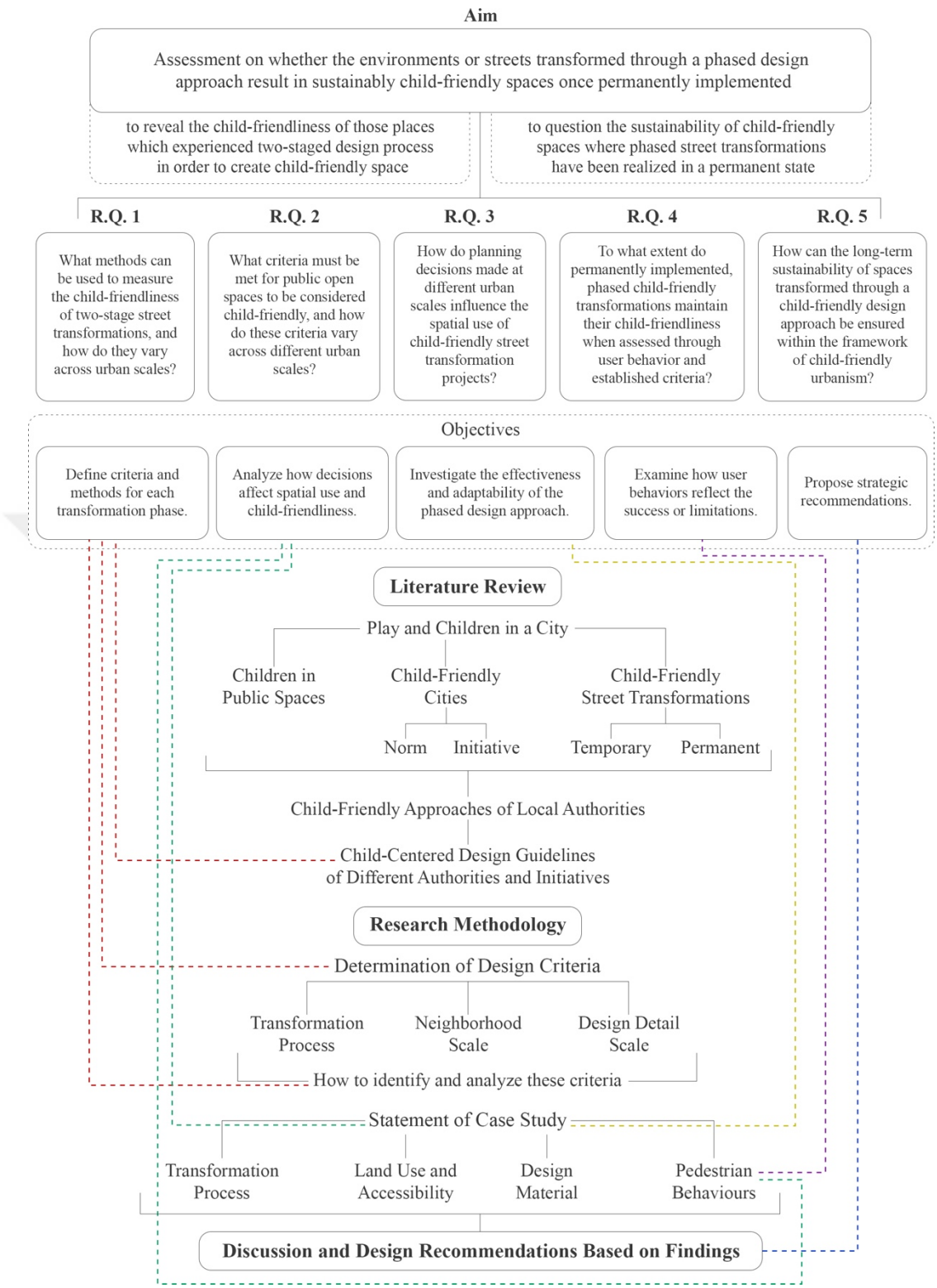

Figure 1.1 : Flow chart of thesis research.

2. PLAY AND CHILDREN IN A CITY

In modern societies, families and parents often believe that today's children are far more advantaged than those of the past, thanks to a wide range of technological devices for enjoyment, the limitless variety of entertainment and leisure options available to them with after school and on weekends events (Freeman & Tranter, 2012). However, alongside these advantages, an important question arises: Are the cities where children live, grow, and eventually become active members of society more advantageous for them compared to the urban structures and lifestyles of the past? Specifically, is children's mobility within cities "independent," or is it "adult-dependent"? (Freeman & Tranter, 2012)

This chapter will address the scope of the thesis from a general perspective, discussing universal definitions of key terms. It is particularly important to clearly define streets, where children often have their first public space experiences, as well as the concept of childhood. Additionally, this section will examine the reflections in the literature on the impact of play on children, and consequently, on society and cities. The relationship of play with children, society, cities, and urban planning, as well as the connections between children and urban planning, will also be explained.

2.1 Children in Public Spaces

A meaningful approach to understanding the relationship between children and urban spaces begins by identifying the environments where children spend their time outside their homes, particularly public spaces. Before delving into the dynamics of cities and the specific ways children engage within urban settings, it’s important to clarify both the definition of public spaces and the international understanding of who qualifies as a child.

Public spaces encompass a diverse array of spatial forms, including squares, boulevards, playgrounds, streets, and edge spaces such as roadsides or the areas between buildings. These spaces are not merely physical locations; they are places

where the first experiences of meeting other people and socializing occur, crucial hubs for various urban activities, facilitating the movement of goods and people, the provision of essential infrastructure, and fostering community life. In this way, public spaces play an essential role in shaping both the character and functionality of a city (UN-Habitat, 2020). Streets, in particular, stand out as key components of public space, forming the largest uninterrupted network for mobility and access within urban areas. They either enable or limit how people move and interact, thus playing a fundamental role in urban connectivity (GDCI, 2019).

Understanding who is considered a child, the youngest individuals of public spaces and future of societies, is equally important when discussing urban spaces and rights. According to the United Nations Convention on the Rights of the Child, a child is defined as any individual under the age of 18. This definition is universally inclusive, recognizing the rights of all children, regardless of their ethnicity, gender, religion, disability, family situation, or personal beliefs (UN, 1989). The Convention not only protects children's rights but also actively encourages their participation in the civic processes that shape their environments. Urban administrations in countries that have ratified this treaty are thus obligated to consider the best interests of children in their decision-making. Furthermore, children are granted the right to participate in community and city planning, ensuring their voices are heard in discussions that affect their urban experiences. The inclusion of "participation clauses" within the Convention has led many development agencies, municipal offices, and community organizations to incorporate children and youth in urban planning efforts, recognizing their unique perspectives as crucial to creating inclusive, child-friendly cities. This global movement underscores the importance of involving young people in shaping the urban landscapes they inhabit, contributing to more equitable and thoughtful urban development.

When examining the historical background of children's place and importance in public spaces, a paper by Perez-del-Pulgar suggests that the concept of "children's playgrounds" emerged after the early child-saving movements of the 19th century. This concept was introduced in response to concerns about morality and cleanliness/hygiene within urban working-class areas. It aimed to remove children from the streets and provide them with opportunities to play in designated and confined spaces (2024). According to Perez-del-Pulgar, gymnasiums and kindergartens, as the

earliest examples of playgrounds, created specific "public" spaces for children to keep them off the streets. These spaces aimed to instill standardized values of citizenship, gender roles, race, nationality, belonging, and physical exercise.

Play has a crucial role in children's development, offering a wide array of physical, social, cognitive, and emotional benefits while fostering overall healthy brain growth (Figure 2.1). Krysiak claims that play allows children to explore their physical, emotional, and social boundaries, helping them to develop skills such as negotiation, empathy, and relationship-building (2018).

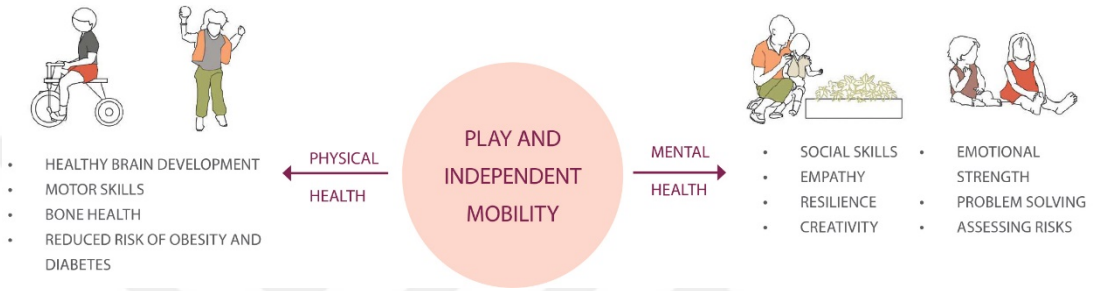

Figure 2.1 : Benefits of play and independent mobility to children's health and development (Krysiak, 2018)

Children learn and grow through play, they encounter in daily life by testing various scenarios. Beyond the individual benefits, integrating play into urban spaces helps children develop a stronger sense of belonging to their community and a deeper understanding of their surroundings (Krysiak, 2018). As Jenny Donovan notes in Designing the Compassionate City, a lack of play diminishes children's ability to reach their full potential and contribute to their communities (Donovan, 2018).

2.2 Child-Friendly Cities as an Initiative and as a Norm

The name "Child-Friendly Cities" was first introduced during Habitat II, the Second United Nations Conference on Human Settlements, held in Istanbul in 1996. This global recognition of the need to address children's rights in urban environments led to the creation of the Child-Friendly Cities Initiative (CFCI) by UNICEF in the same year. The initiative was developed to help municipal governments implement the UN Convention on the Rights of the Child at the local level, ensuring that cities cater to the specific needs and rights of children (UNICEF, n.d.). The CFCI has since grown into a global network that not only includes government officials but also engages civil society organizations, the private sector, universities, media outlets, and most

importantly, children themselves, creating a platform for collaboration in making communities more child-friendly. UNICEF highlights the significance of this initiative as a multi-stakeholder approach, where children can actively participate in shaping their urban environments (UNICEF, n.d.).

A child-friendly city means more than rethinking public space. Although initially conceived as a project to be implemented in large cities, the CFCI has gradually started to influence smaller towns and communities as well. This initiative supports the development of city strategies centered around children's rights within local and central governments, providing guidance in decision-making processes. According to the CFCI, the ways to ensure children's active participation and integrate children's rights as a perspective in governance decisions are illustrated in the following diagram.

According to UNICEF CFCI, child-friendly cities are addressed with a multi-layered structure, showed in Figure 2.2. Children's rights are a subject that is addressed in every aspect of life, from the right to play to protection from violence, from green space opportunities to health opportunities. Within this framework, the right to play, safe streets and accessible green spaces are in a place that can be examined and developed with the urban design branch.

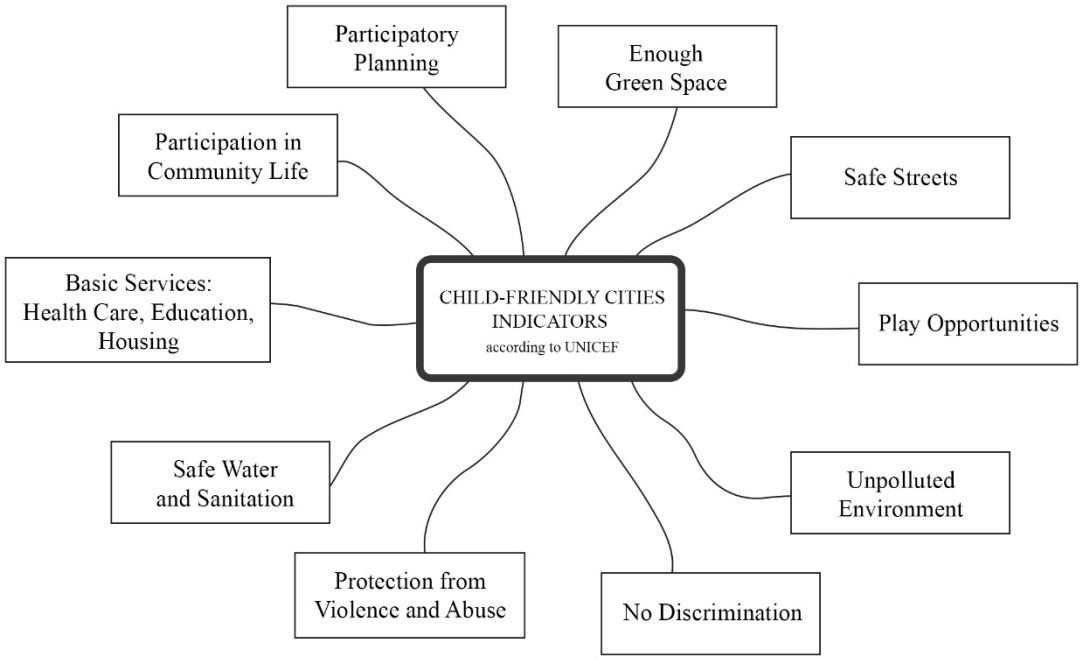

Figure 2.2 : Criteria of child-friendly cities defined by UNICEF (edited by author).

Furthermore, the CFCI is aligned with the United Nations' Sustainable Development Goals (SDGs), specifically Goal 11, which emphasizes making cities and human

settlements inclusive, safe, resilient, and sustainable by 2030. This alignment ensures that the initiative contributes to broader international efforts to enhance urban life for all residents, with a particular focus on children (UNICEF, n.d.). Basically, the CFCI supports and encourage communities and cities to create better public spaces for the safety and health of kids with green areas, playgrounds and safe roads, which overlaps with the aim of the "Sustainable Cities and Communities" from sustainable development goals.

Another key international initiative that directly addresses children's experiences in urban environments is the Growing Up in Cities (GUIC) project. Originally developed by urban designer Kevin Lynch and later expanded by environmental psychologist Louise Chawla, the GUIC project, funded by UNESCO, aims to improve urban design through participatory research that involves children. By giving children a voice in the planning and design of their cities, the project seeks to inform local and national policies to better address the needs of young residents. This initiative has been implemented in over a dozen countries, highlighting children's perspectives on urban quality and prioritizing their needs for change (Moffat, 2002; Chawla, 1997). The project underscores the importance of incorporating children's insights into urban planning to create environments where they can thrive and feel a sense of belonging.

Cities with safe environments, easily accessible facilities, pedestrian-friendly roads reduce the risk of injury to children. The ability of a child to play in streets or safely walk to anywhere from their living spaces shows the city's safety index would be much higher, the city itself would foster inclusivity and support the physical, mental, and emotional growth of children. So that, when the city design considers the safety and needs of children, it becomes inclusive and safe for everyone. While the significant problem of most urban planners is being inclusive for all, focusing on child-friendly cities with safer streets, easier access to green spaces, and improved public services may be a lighting way. To sum up, child-friendly urban design should seek for safe mobility for children, play and learning spaces, accessible school routes and inclusive public spaces.

2.3 Child-Centered Street Transformation

As the dominance of private vehicles on the streets increased in the mid-20th century, the priority in the design of residential areas changed rapidly to accommodate the

comfort of drivers (Krysiak, 2021). The report that Gehl Institute and BvLF prepared states that the streets should not be just pathways that people move through, they should also be considered as places to spend time and interact with others (2018). Also, they add that re-thinking streets when planning are especially important in terms of young children needs, while their mobility opportunity is narrow and this means the streets are the easiest option for them to reach any public realm. While streets were designed to ensure comfortable and fast movement of vehicles and easy parking; dominance in cities began to pass to vehicles and vehicle drivers. Although the negative effects of motor vehicle-oriented urban planning on the economy, environment and health in the long term have been a topic of discussion for pages for a long time, the effects of the dominance of vehicles on the streets on children and what can be done about it have recently become a trending topic (Krysiak, 2021). While there were children who grew up playing on the streets in the past and knew that this was a tradition, today the presence of children on the streets and the child-street relationship have gradually decreased. Another problem about the rise in car use is that it increases social inequality among children, as not all have access to cars or parents to support them carry. It also limits the independence of children in areas affected by heavy traffic, without offering them the benefits of private transport.

Outdoor play or play in street are crucial for children's physical, emotional, social, and cognitive development. Without this freedom, children struggle to build a sense of connection to their neighborhood and community, losing valuable opportunities to engage with their environment and develop real-world experiences (Freeman & Tranter, 2012). This lack of connection can lead to feelings of detachment and isolation. Over time, it may hinder their ability to navigate and contribute to their surroundings meaningfully (Freeman & Tranter, 2012). Even it can cause disability to cross roads when they grow up, because they have never taken risks on streets and never had the experience of determining various possibilities by playing games on the streets. Additionally, limited outdoor exploration can reduce their creativity and problem-solving skills. A diminished sense of place also weakens their understanding of environmental stewardship and local culture (Freeman & Tranter, 2012).

The restriction of children's independent mobility (CIM) due to the dominant movement of vehicles on the streets increases the risk of traffic accidents. When there are fewer children on the streets, fears of "stranger danger" also increase because there

are fewer observers on the streets (Freeman & Tranter, 2012). This situation is equivalent to Jane Jacobs' "Eyes on the street" theorem. When children cannot be free on city streets, they cannot gain experience in road safety and miss the opportunity to be a part of city life. In addition, they are deprived of the pleasure of the journey and the sense of discovery while walking home from school. This prevents children from establishing a connection with the city and getting to know their environment, pushing them to a more isolated and passive lifestyle (O'Brien, 2003). Streets and cities that appeal to children and are designed according to their needs encourage their mobility and consider the well-being and mobility of every age group in the city. The former mayor of Bogotá, Peñalosa, underlines the importance of a CIM in a city with safely predictable traffic by claiming the children as an indicator for cities (Gill, 2017).

One of the actions to reach child-friendly cities is to create child-friendly streets, while streets are where children first learn about the world. Thus, the design of streets and what they provide matter in terms of child-friendly cities. Transforming streets to enable children to safely walk to school and play outside their homes allows parents to supervise them passively and this approach also fosters stronger community ties, as children can easily interact with their neighbors, reducing the need for parents to drive them to designated play areas or school. Krysiak advices the planners, designers, and caregivers to rethink why street design often prioritizes driver convenience over children's well-being (2021). Promoting active mobility, such as walking and cycling, is crucial to create awareness of centering children's play and mobility in neighborhood planning benefits not only the youngest residents but also strengthens community connections, encouraging a playful and more cohesive urban life.

Studies on British 10 and 11 year olds cited by Freeman and Tranter in their book illustrates in the Figure 2.3 that as time progresses and therefore vehicle use increases, there is a decrease in the daily on their own routines that children experience on city streets (2012, p.188). It can be interpreted that, especially with the decrease in the rate of being able to cross the street alone, the ability to develop reactions to this simple routine, which has important effects on children's development, or the ability to assess risks on the street will decrease. Regardless of the activity details, Freeman and Tranter stated that children's independent mobility has decreased since 1990 and that children may therefore have significantly less freedom (2012, p.187).

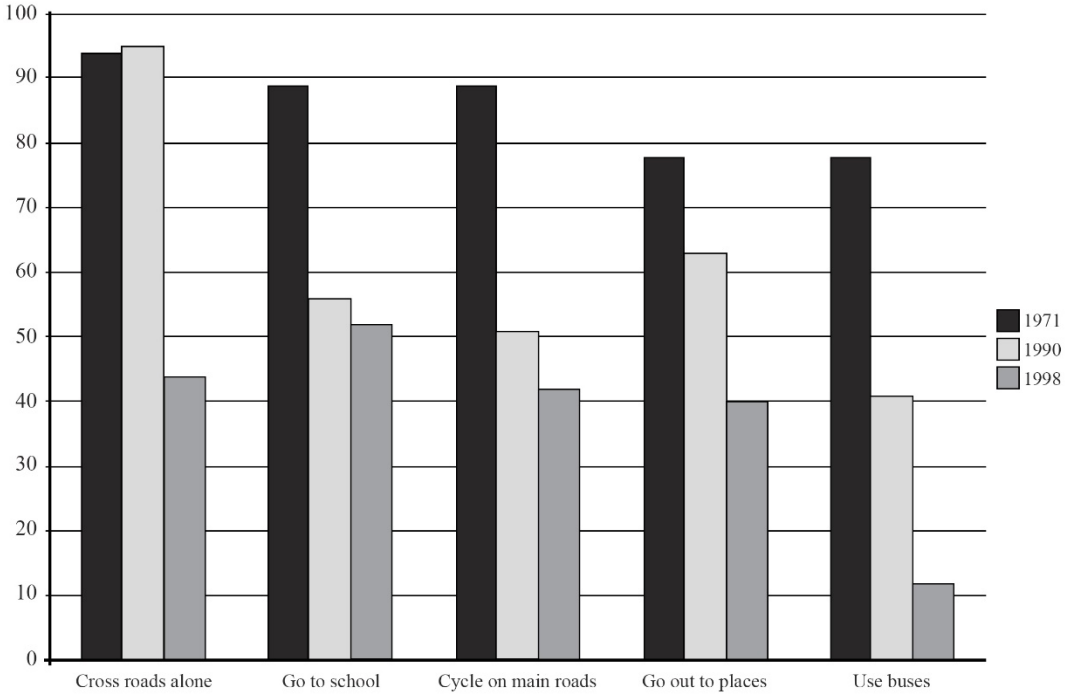

Figure 2.3 : Proportion of British 10- and 11-year olds able to undertake activities unaccompanied (Freeman & Tranter, 2012; edited by the author).

Even though the graphs are the results of different countries, they tell that with the negatively change of CIM, the preferred mode of transportation also changes through private car use than walk or public transportation alternatives. Figure 2.4 clearly shows that car use and walking or bus use on the way to school vary inversely. Freeman and Tranter also adds their note on the increased distances between destinations and children's home are effective on change of CIM (2012, p.188).

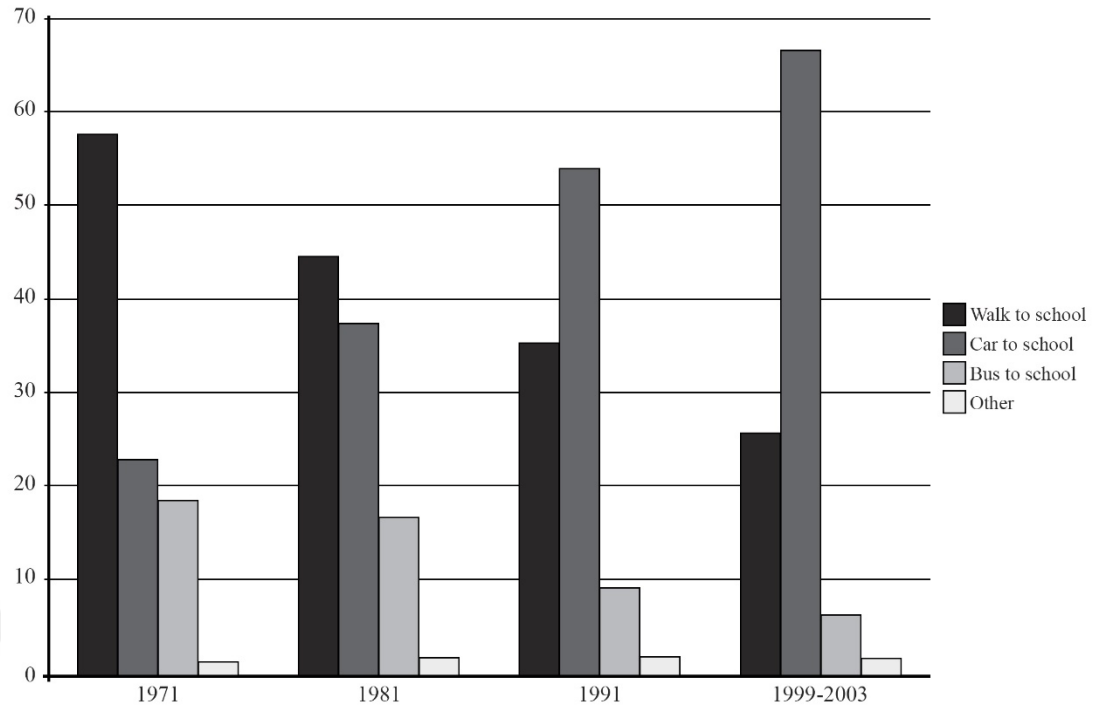

Figure 2.4 : Mode of travel to school for children aged five to nine in Australia (Freeman & Tranter, 2012; edited by the author).

The dominance of motor vehicles on streets nearly affects all urban dwellers in terms of traffic safety. With the increase in motor vehicles on the streets and the increasing fear of "stranger danger", the independent presence and mobility of children on the streets has decreased. It is also crucial to focus on the data given about children for, road crashes are the second leading cause of death among children aged 5–14, underscoring the need to integrate traffic safety into child-friendly urban design approaches (Welle et al., 2015). In a street design guide prepared by WRI, it is stated that traffic safety affects not only children but all urban residents, with even gender inequality being influenced by both real and perceived differences in safety (Welle et al., 2015). Vulnerable populations such as those from low-income backgrounds, the elderly, and people with disabilities are disproportionately affected due to inadequate infrastructure and limited mobility options (Welle et al., 2015). The mobility of people by vehicles causes a direct decrease in pedestrians, namely people, on the streets, and prevents children from being under indirect supervision, thus reducing children's use of the streets.

A neighborhood is generally defined as an area that individuals can walk from their homes in approximately 20 minutes. This limit is based on the average time revealed in studies on people's walking preferences (Gürdoğan, Gürdoğan & Thomsen, 2020).

To create truly livable and equitable urban spaces, traffic safety must be treated as a foundational element of city planning (Welle et al., 2015). In order to create neighborhoods that encourage pedestrian access, it is recommended that streets be redesigned in a pedestrian-oriented manner with low-cost methods, especially in areas with low vehicle density (Gürdoğan et al., 2020). Within this goal, one of the projects of ITDP named "Pedestrian First" calls out the importance of walkability. Rather than the motor vehicle use, the project aims to spread the benefits of walking. According to their article, walkability leads cities to be more equitable and walkability is good for resilience, the environment, health, the economy and the society (Url-13). Walking is a child-friendly transportation alternative in a way.

In addition to child-friendly transportation alternatives, the distance of various facilities, schools, etc. that meet needs to where children live is also important. For young children and the adults who care for them, being able to stay in the home environment depending on biological rhythms is of great importance. Therefore, short walking distances become a vital need for these groups (Gürdoğan et al., 2020). In particular, the distance of schools to where children live significantly affects the preferred type of transportation. For primary school children, the rate of walking to school begins to decrease when the distance exceeds half a kilometer and decreases rapidly beyond 1.5 kilometers. According to Barker's research in the United Kingdom, the car becomes the most common means of transportation beyond 1 mile, 1.6 km with metric measurement (2006). Based on this data, the existence and distribution of neighborhood schools can increase CIM and the preference for walking as a means of transportation. According to Freeman and Tranter, CIM in general can be improved through policies that include local neighborhood-level speed limits and various traffic calming measures (2012).

The project "Pedestrian First" of ITDP, which supports walkable cities and working on walkability, address policy recommendations developed under the headings of accessibility to services in urban planning, public transport connectivity, population and block density, and integration of car-free public spaces (Url-13). Basically, in order to increase individuals' access to basic services, especially within walking distance, the promotion of mixed-use areas, high-density construction, and geographically balanced distribution of social services are recommended. In terms of access to public transport, the integration of dense and mixed-use residential areas with

public transport networks, the improvement of pedestrian and bicycle infrastructure, and the measurement of inclusiveness of access are emphasized. In terms of block density, smaller block sizes and street arrangements that will provide permeability for pedestrians are recommended; it is stated that this situation will increase walkability and local interaction. In terms of population density, it is recommended to encourage dense, accessible, and housing production that appeals to various income groups in existing city areas in a way that prevents low-density sprawl. In addition, increasing car-free areas, transforming existing public spaces and revitalizing public life with rapid, low-cost urban interventions are particularly emphasized in order to create child-friendly and livable neighborhoods (Url-13).

Although the concept of a child-friendly city emerged years ago and has become popular recently, the fact that child-focused street transformations are among the policies and actions of local governments shows that this issue has now gained importance in politics and worldwide. Child-focused street transformations, which are one of the most visible and preferred practices on the way to becoming a child-friendly city, are carried out in two different ways worldwide: temporary and permanent applications. In addition to incorporating permanent design features that encourage children's play, temporary street closures offer an easy way to activate streets and shift their priorities. However, both of the transformation methods may include tactical actions.

When it comes to the definition of tactical for cities, Lydon, Bartman, Woudstra et al. (2011) include interventions that can be scaled and can be done in the short term and at low cost. In order to talk about what tactical means, they refer to Merriam-Webster's definitions as "of or relating to small-scale actions serving a larger purpose" or "adroit in planning or maneuvering to accomplish a purpose" (Lydon, Bartman, Woudstra et al. 2011). As a result, as stated in the title of the book, the long-term change effect created by short-term action is emphasized for tactical urbanism which sometimes may be confused by the names "guerilla urbanism", "pop-up urbanism", "city repair" or "DIY urbanism" (Lydon, Bartman, Woudstra et al. 2012). At the same time, Yassin (2019) states that tactical actions create positive feedback in bottom-up and top-down processes by creating bridges between different scales. Yassin mentions the following benefits of tactical urbanism:

- It can be applied at any scale from a blank wall to a wide street,

- It allows the application area to be used as a laboratory and to show and test different possibilities,
- It can be implemented at low cost as it is carried out as interventions in existing areas and is open to citizen support.

Yassin (2019) and Silva (2016) both mention that although public officials have typically prioritized strategy over testing, it is advised that governments adopt a more tactical approach. Silva touches on this issue by stating that tactical actions cover an area where citizens are more involved in an environment where public institutions are less responsive to public goals (2016). It is better for citizens to view both strategy and tactics as equally important and interdependent. Yassin (2019) explains that tactics not only strengthen government support but also encourage their use, leading to successful outcomes. Additionally, tactical actions typically begin with temporary installations, providing immediate benefits that help in planning the permanent implementation of the project, especially for new ones (Yassin, 2019).

Looking at the different tactical actions with different concerns and themes, there are several ways and goals. In their first book, Lydon, Bartman and Woudstra (2011) mentions 5 different tactical actions (Intersection repair, Guerrilla wayfinding, Build a Better Block, Parkmaking, Pavement to plazas) in different places around world to assure that small actions cannot develop into larger ones without effective leadership.

2.3.1 Temporary street transformations

Especially during the COVID-19 pandemic, with the decrease in the dominance of vehicles on the streets and the increase in the need for outdoor children's playgrounds in areas close to residential areas, the idea of using streets as playgrounds for children has become widespread. Temporary street closures with tactical urbanism methodology offer an easy way to activate streets and shift their priorities with the cheapest budget. Figure 2.5 is giving an example of temporary street close, “Play Street” in Bristol, with low budget equipments. After the pandemic, the continuation of this idea and the increase in temporary street closure practices have attracted attention. However, temporarily closing streets to traffic and turning them into play and spending time areas dates back much further.

Figure 2.5 : Closing the vehicle traffic for play street event in Bristol (Playing Out, 2014)

The story of “play streets” started in the beginning of the 20th century with Joseph Lee, President of the New York City Playground Association, pioneering the idea that play is essential. With the end of the first world war, there were street parties organized in London and country wise to celebrate the Peace Treaty.

The parties were structured gatherings primarily organized for poor and orphaned children following the war and the ‘Spanish’ flu. This is why street parties traditionally emphasized children sitting together for tea. According to London Play Street (Url-1), between 1924 and 1933 the death numbers of children were rising and after 1926 the government started to arrest children who plays in streets. The information of 1935 is that there were over 2000 children under 17 years old recorded as guilty for playing in the streets. In 1937, with the King George IV, Play streets were piloted in Paddington, London, leading to the introduction of the Street Playgrounds Bill in parliament and then culminating in the "1938 Street Playgrounds Act", It allowed local authorities to close "appropriate streets to traffic at appropriate times", enabling these areas to be used for children's play. Till 1963, the play streets were so popular and that year was the peak for play streets. However, after the peak, play streets declined due to increasing car dominance and urban changes, despite legal provisions. After 2008, a revival of play streets began, driven by initiatives like London Play and government support, emphasizing their health, social, and community benefits.

2.3.2 Permanent street transformations

One approach that streets can be designed to promote play through simple and effective measures is “home zones” within neighborhoods, a common practice in European countries like Germany. This concept, originally from the Netherlands and known as 'Woonerf' (meaning "street for living"), balances the needs of drivers,

pedestrians, cyclists, and children playing. Lydon (2011) notes that woonerf is conspicuous for, unlike many street design innovations in the past century, it did not come from the field of traffic engineering but was instead initiated by citizens aiming to slow down traffic in their neighborhood. It incorporates traffic-calming strategies like signage, reduced speed limits, speed bumps, and street bends to slow vehicles. Large ground markings further remind drivers of the shared space and the importance of prioritizing children's safety. Some examples also provides the participatory activity with kids and their caregivers as shown in Figure 2.6 with an example of ground marking event which is also a tactical action. Making these projects together whit kids and other residents leads the project to be more belonged by people which creates more powerful effect.

Figure 2.6 : Creating a street carpet as part of Sustrans DIY Streets project to encourage drivers to drive slowly (Url-2)

A Woonerf transforms streets into shared spaces without curbs or sidewalks, where pedestrians, cyclists, and vehicles coexist. Features like trees, planters, and parking areas act as obstacles, slowing cars to speeds below 10 mph. This setup turns streets into community spaces designed for local residents to socialize and play, fostering a sense of neighborhood connection and safety. In order for vehicles to understand that the designated street is a shared zone, a sign, such as the one shown in Figure 2.7, is used at the beginning of the street. The sign shows that children and their caregivers share a street with vehicle drivers.

Figure 2.7 : Shared zone sign (Url-3)

One approach on permanent street transformation is transforming the street with a rehearsal phase. Gürdoğan et al. describes this method as “phased design strategy and transformation rehearsal” with connecting the strategy to walkability (2020). According to their report, this methodology helps for an easier process to change. By making a rehearsal, the locals, users and the municipal government get prepared to the final result, step by step. Phased design strategy also strengthen the participatory decision-making for it provides a space for the locals to bring their ideas directly to the project area. As another characteristic of the phased design process, it has been noted that this process is carried out in coordination with various departments by the project implementers. It provides a decision-making environment that fosters unity and collaboration by bringing together decision-makers, NGOs, and citizens. The integration of the prototyping phase into the decision-making mechanism enables a preliminary assessment of the project's impact before high-budget investments are made, supporting more data-driven and reliable decisions (Gürdoğan et al., 2020).

2.4 Child-Friendly Approaches of Local Governments

The concept of a "child-friendly approach" in urban planning has gained significant traction in recent years, with many worldwide cities -such as Auckland from New Zeland, Barcelona from Spain, London from UK, Copenhagen from Denmark, Melbourne from Australia, Berlin and Munich from Germany- developing strategies to prioritize the needs of young people in city design. While some initiatives explicitly

use the term "child-friendly," others may not, but still reflect a clear commitment to transforming public spaces for children's benefit. Notable examples of such transformations, which have garnered significant attention and shaped urban perspectives, demonstrate how city streets can be reimagined to foster a safer and more engaging environment for children.

Koçaş & Kısar Koramaz (2024) investigated the transformations implemented in three metropolitan cities on child-friendly street transformations, where the child-friendly approaches of local governments are most visibly exhibited. As part of their study, the criteria under the title "How to Make Change Happen" in the "Designing Streets for Kids" design guide of NACTO & GDCI (2019) were used as an evaluation and comparison method. In line with these criteria, child-friendly street transformation processes in Milan, Paris and Istanbul were examined and compared in their study (Koçaş & Kısar Koramaz, 2024).

According to the study by Koçaş & Kısar Koramaz (2024), the comparisons of the decision-making processes of child-friendly street transformation in three metropolitan cities are summarized and presented in Table 2.1 in a tabular form. In line with these comparisons, it is observed that the decision for the street transformation process in Paris was made not in line with an action plan, but in line with the promise of the mayor. At the same time, unlike other major cities, Paris carried out its work without collaborating with any stakeholders. It was observed that children and their caregivers were included in the process in all three metropolitan cities as a child-friendly street transformation initiative, and it was determined that Milan differed from other metropolitan cities in terms of two-phased implementation. Milan implemented the cost-effective street transformation, which is an advantage of the tactical urbanism method, in the field not as a rehearsal but as a permanent application. Nevertheless, its implementation on other streets was completed after a pilot project implementation. This approach of Milan was evaluated as a common approach with the aim of presenting different living space options to the public, similar to the temporary transformation projects in Paris and Istanbul.

Table 2.1 : Comparison of metropolitan cities in the guide of child-friendly streets (Koçaş & Kısar Koramaz, 2024)

Criteria of Child-Friendly Streets	Milan	Paris	Istanbul
Prepare an action plan.	Territorial Government Plan (PGT 2030)	No action plan, but was on the mayor's election promises.	Play Master Plan (IMM, 2022)
Collaborate with multiple stakeholders.	Metropolitan municipality, NGOs & agencies invest for children	Metropolitan municipality	Metropolitan municipality, district municipality, NGOs & agencies invest for children
Involve children and caregivers in the process.	Decision-making and budget planning were done by several events with citizens. During implementation process, citizens were also participated.	The first phase that includes temporary pedestrianization leads the process with participation and decision-making of children and local people.	Before implementing a pedestrianization decision, with the temporary street transformation, the opinions of children and local people were received through various methods.
Experiment with various analysis and decision-making methods.	Tactical urbanism	The entire process and planned areas are divided into two separate phases.	Tactical urbanism, total reconstruction
Showcase possibilities.	After one pilot project, it was also applied to other streets.	Temporary street transformations for rehearsal to see the reaction.	Temporary traffic slow-down or pedestrianization for rehearsal to see the reaction.
Temporarily open streets to children.	-	Temporary street transformations before permanent ones.	Temporary street transformations before permanent ones.

Based on the study published by Koçaş & Kısar Koramaz in 2024, this chapter will investigate the approach of local governments in three metropolitan cities to child-friendly street transformation. In this context, the strategies adopted in the three metropolitan cities in question will be examined and how these cities approach child-friendly urban design at a strategic scale will be analyzed. The various paths followed by metropolitan cities to create more inclusive and accessible spaces for children and their broader effects on urban development will be revealed.

2.4.1 Milan, Piazze Aperte (Open Squares)

The 2020 Territorial Government Plan ("Piano di Governo del Territorio" in Italian, or PGT in short) prepared by Milan is a draft strategic plan that addresses the future development of the city from a technical and visionary perspective. The strategic plan was also a guideline for urban development and PGT was created with a participatory process with citizens (Sicignano & Caljé, 2022).

There are several themed goals to reach "Milan 2030"; climate change related goals, ensuring affordable rent, an active and intermodal mobility with a connected-accessible city for cyclists and pedestrians, and focusing on redevelopment of public

spaces and suburbs with a fight against abandoned buildings (Sicignano & Caljé, 2022).

Pilot project program was “Piazze Aperte” in Italian, “Open Squares” in English, developed by different stakeholders such as the municipality, AMAT, Bloomberg Associates, NACTO and Global Designing Cities Initiative. The first projects experiences in Piazza Dergano and Piazza Angilberto II, with before and after visuals shown in Figure 2.8 and 2.9, with tactical urbanism as implementation method (Sicignano & Caljé, 2022). Tactical urbanism involves non-permanent, low-cost interventions with ground paintings, street furniture, urban gardens, and new pedestrian or cyclist spaces that can be quickly implemented to generate immediate impact and test innovative solutions. This approach allows for experimentation and easy reversal if unsuccessful, as demonstrated in Milan.

Figure 2.8 : Before and after tactical intervention, Piazza Dergano (Sicignano & Caljé, 2022; photo by Demetrio Scopelliti)

Figure 2.9 : Before and after tactical intervention, Piazza Angilberto (Sicignano & Caljé, 2022; photo by Demetrio Scopelliti)

2.4.2 Paris, Rues Aux Écoles (School Streets)

Paris as a worldwide metropolitan city brought “Rues aux Écoles (School Streets)” to life. Christophe Najdovski, Deputy Mayor of Paris, says that the project was among

the current mayor's election promises and the goal is to transform 300 streets to Rues aux Écoles by the end of mandate which is 2026 (Streetfilms, 2024). The aim of Rues aux Écoles is pedestrianization of streets nearby schools and to create safer, greener and more playable accesses for children and their journey to schools (Ville de Paris, 2023). Paul Lecroart, a senior urban planner working in Planning Agency for the Paris Metropolitan Region, claims that the idea for this project is to cut through traffic, make children to go to school on foot and make the city centred around schools and a quarter (Streetfilms, 2024).

Figure 2.10 : Before and after pedestrianization, Rue de la Breche aux Loups (Streetfilms, 2024)

Figure 2.11 : Before and after pedestrianization, Rue de Belzunce (Streetfilms, 2024)

In Paris, the number of permanently pedestrianized streets by now is 180 according to Christophe Najdovski (Streetfilms, 2024). Two examples of the project with before and after photos are shown in Figure 2.10 and 2.11, that also show the transformation of streets from vehicle use to pedestrians only with the ground markings, planting and bicycle parkings in school streets.

The methodology of Rues aux Écoles has two stages. The goal for phase 1 is to pacify 300 streets and see the results and reactions of people for cutting the traffic. If phase 1

the rehearsal is successful, then the phase 2 takes the stage, and the goal for phase 2 is to re-build 100 streets totally.

2.4.3 Istanbul, Play Master Plan

Istanbul Play ("Oyun İstanbul" in Turkish) is a transformative initiative of Istanbul Metropolitan Municipality (IMM) Directorate of Parks, Gardens, and Green Spaces - Green Istanbul ("Yeşil İstanbul" in Turkish) with its branding name- that aims to make Istanbul as a city where all residents, particularly children, can fully enjoy their right to play with their motto "From a city with playgrounds, to a playable city" (IMM, 2022). Through research, projects, production, and collaborations, the initiative focuses on improving and diversifying opportunities for play and physical activity in public spaces, making them accessible to everyone. The ultimate goal of Istanbul Play is to evolve from a city with playgrounds to a truly playable city, fostering social interaction and contributing to broader community life (Istanbul Green, 2020).

The Istanbul Play Master Plan, developed by the IMM Directorate of Parks, Gardens, and Green Spaces through the Istanbul Play project, seeks to enhance the quality of life in the city by making outdoor play and physical activity central to urban planning (IMM, 2022). The plan takes a holistic and inclusive approach, recognizing the value of play and play culture as essential components of a livable city (2022). This framework is designed to guide future actions toward making Istanbul a child-friendly, playable city. The plan includes specific strategies, actions, and pilot projects aimed at creating accessible, safe, and enjoyable spaces for children and families (IMM,2022).

Figure 2.12 : A moment from Traveler Playground ("Gezgin Oyun Parkı" in Turkish) project of Üsküdar Municipality (Url-4)

One of the core actions of the master plan is to encourage free play in public spaces, especially in streets that are vital for children's mobility. Street closures for pop-up play spaces are among the proposed interventions, creating temporary spaces for children to engage in creative and unrestricted play. Temporary street closure for play project is also expanded and gave influence to other districts of Istanbul like Üsküdar and Şişli (Url-4 & Url-5). In 2024, these two district municipalities started a project for temporary street closures to create temporary play areas. Figure 2.12 is an example from Üsküdar Municipality's project (Url-4).

Figure 2.13 : A moment from Children Design Their Park project of IMM (Url-6)

Another important action of Istanbul Play Master Plan is the development of child-friendly participation methods, which involve children in the design process of public spaces. This includes projects like Children of Istanbul Design Their Parks ("İstanbul'un Çocukları Parklarını Tasarlıyor" in Turkish) where children actively contribute to the design and implementation of play areas (Url-6). Figure 2.13 shows a photo taken with the children's products after the activity. This participatory approach not only empowers children but also strengthens their connection to their environment and community.

Istanbul Play Master Plan is driven by several strategic goals, including creating a play culture, enhancing safety in play areas and strengthening the urban infrastructure for play (2022). The plan focuses on promoting the individual, societal, and collective benefits of play in Istanbul, with awareness campaigns and the integration of play into the city's urban identity (IMM,2022).

To sum up, Istanbul Play and Play Master Plan represent a significant step toward making Istanbul a city where play is recognized as a vital aspect of urban life. By focusing on play as an essential urban value, the initiative aims to create a more inclusive, healthier, and more engaging city for all. According to the works of Istanbul Play and Istanbul Play Master Plan, through collaboration, participation, and thoughtful design, the vision of a playable city can become a reality, offering enriching opportunities for all of Istanbul's residents.

2.5 Child-Friendly Design Guidelines

Creating child-friendly streets and ensuring public acceptance of these changes requires various strategies. Design guidelines are a pathfinder that shows "how to achieve" a specific design approach. In other words, if cities have a goal of reaching a design approach, using various design guides or guides that they have created will both help in terms of the process and provide the opportunity to test how successful the area created at the end of the process is in relation to the desired situation. Bernard van Leer Foundation is an organization to help and support governments in this subject, which was founded in 1949 (Url-7). The primary aim of the foundation is to strengthen communities by providing wellbeing of young children and people that care for them. The organization is currently working with several governments such as Netherlands, Jordan, Israel, India and Brazil; besides that, they are being active in more than 50 countries across the globe (Url-8). They also provide consultancy to the governments and other organizations to create their own design guidelines in context of creating child-friendly spaces, neighborhood or streets.

Within the scope of the thesis, there are five different design guides examined. The five different design guides have been prepared for different countries and global design approaches and will reflect different perspectives. They will be compiled independently to provide guidance for child-friendly neighborhoods, spaces, and child-centered streets. Three of the five design guides investigated in the literature review were prepared under the consultancy of BvLF; they are design guides organized for global, Indian Government, and Israeli Government. The design guide, which was created with the collaboration of UN-Habitat and Institute for Transportation & Development Policy (ITDP), was prepared for African cities. The design guide prepared by WRI was also prepared for a global scale and was included in the scope of the research because it would reflect a different perspective. Examining the design guides prepared by different organizations and independent institutions such as associations and administrations of different countries will enable the evaluation of different detail perspectives in child-friendly design guides together.

2.5.1 Designing Streets for Kids, NACTO &GDCI

The National Association of City Transportation Officials (NACTO) is an association collectively working and built with 100 major North American cities and transit

agencies to improve transportation ideas, better implementations on transit and encourage movement of communities (Url-9). The Global Designing Cities Initiative (GDCI), which was born in 2014 as a program of NACTO, is an initiative that aims to rethink streets for people, and to create safe, healthy, accessible cities for everyone (Url-10). In their design guide, NACTO and GDCI emphasize the importance of prioritizing people, particularly children and their caregivers, in street design (2019). The design guide provide a detailed and specific set of guidelines aimed at creating child-friendly streets, underscoring the critical need to address the unique requirements of these groups when designing urban environments. Their 2019 guidelines stress the importance of fostering long-term transformation by establishing a clear vision, involving key stakeholders, updating existing regulations, and conducting thorough impact assessments. These steps are seen as a fundamental process to creating safe, inclusive, and child-friendly urban environments. The guidelines propose several actionable strategies to process (Table 2.2).

Table 2.2 : The process for a child-friendly street (NACTO & GDCI, 2019).

Strategies	**Details**
Prepare an action plan	Begin by outlining a structured plan that identifies the vision, sets goals, networking and lays out specific steps to redesign streets with a focus on children's needs.
Collaborate with stakeholders	Engage a diverse range of partners, including local governments, urban planners, community organizations, and educators, to ensure all perspectives are considered.
Involve children and caregivers	Actively include the end-users—children and their caregivers—in the planning and design process. This involvement ensures the solutions are practical, relevant, and directly address their needs.
Experiment with analysis and decision-making methods	Test various tools and methodologies to evaluate urban spaces, enabling innovative approaches to decision-making and prioritizing child-centric solutions.
Showcase possibilities	Use demonstrations, pilot projects, and temporary interventions to illustrate what child-friendly streets could look like and how they function, to allow stakeholders and the public to visualize the potential impact of the proposed changes.
Temporarily open streets to children	Create temporary car-free zones to allow children to explore streets safely. These experiments not only offer immediate benefits but also help gather insights for permanent implementations.

By addressing these aspects, NACTO & GDCI aim to establish urban streets that prioritize safety, engagement, and accessibility for children and families. The goal is not only to meet immediate needs but also to foster sustainable, long-term

improvements in urban environments tailored to younger generations. Understanding how different streetscape elements function together—such as sidewalks, ramps, greenery, and play features—enhances public spaces for children. According to them, designing with children's perspectives in mind encourages play, learning, and social interactions, fostering spaces that are both practical and enriching for families (2019). In line with these criteria, NACTO & GDCI have shared the elements that should be present in the streets and their details in the design guide they prepared (2019). In the book, the design elements required for child-friendly streets include very comprehensive factors such as pedestrian crossings, sidewalks, pause and play spaces, seating details, play and learning spaces, nature and landscaping, transit stops, cycle infrastructure, cycle facilities and additional elements (NACTO & GDCI, 2019). The details of each design element mentioned for street design are specified down to the required measurement ranges. In this context, the design criteria compiled from NACTO & GDCI's design guide are given in Appendix A.

2.5.2 ITCN Design Guidelines: India

The Ministry of Housing and Urban Affairs connected to the Government of India prepared a design guideline for infant, toddler, and caregiver-friendly neighborhoods with support of the Bernard van Leer Foundation (BvLF) and BDP which is an architecture and urbanism office (2019). The guide aims to define physical components and approaches to improve ITCN, interrelate the elements and make a connection of which objectives are achieved. It starts with 5 elements of a neighborhood to define the neighbourhood frame and to direct the reader or user easier. The indicators of design guidelines will be grouped under these elements.

- Neighborhood layout, which is the larger scale component and covers the overall identity with density, distances and distribution of facilities.
- Streets, where the most mobility-related activities are happening in cities.
- Parks and open spaces, which are significant green stations for ITCs.
- Social infrastructure that encompasses neighborhood resources and communal services.
- Urban services, that cover some environmental factors such as water, electricity, waste, drainage etc.

The elements have indicators and all indicators also are grouped under objectives sorted by the design guidelines as shown in Figure 2.14 with their logos. Defining objectives is important that indicators are evaluated under certain targets and themes so that they do not lose their theoretical basis.

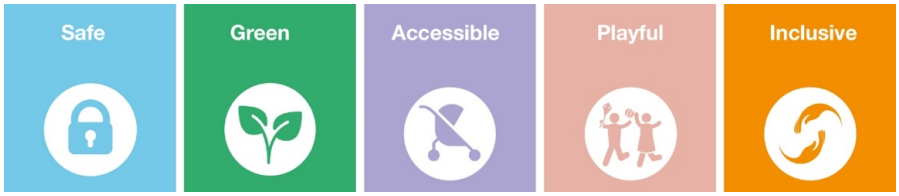

Figure 2.14 : Objectives of ITCN design guidelines (The Ministry of Housing and Urban Affairs of Government of India, 2019)

The guidelines also outlined key factors to enhance benefits, promote efficient use, and ensure the overall success of public spaces (2019).

- A combination of short-term, hands-on action, and long-term strategies
- Collaborative efforts, alliances for public spaces, and self-directed initiatives
- Oversight and coordination of place
- Quick trial-and-error solutions
- Evaluation of expenses and advantages

Table 2.3 : Indicators of the element "neighborhood scale" in ITCN design guidelines (The Ministry of Housing and Urban Affairs of Government of India, 2019)

Objectives Achieved	Indicators
	1. Perception of safety for ITCs of key public amenities - streets, parks, playspaces, school, health services, etc.
	2. Percentage of caregivers and infants/toddlers walking to public amenities (schools/kindergartens, playground, parks, health services) 3. % of buildings within 300m distance of a green space 4. % of buildings within 300m distance or 5-10 min walking distance of a public facilities like day care centres, pre -primary and primary schools, primary health facilities, local markets 5. % of daily trips by non-motorized means. 6. % of journey destined at crèche / kindergarten / play school is by walking or cycling. 7. % of crèches within accesible 500m distance from housing cluster. 8. Number of tot lots 9. Number of good quality housing area park spaces in the neighbourhood 10. Number of good quality neighbourhood park spaces in the neighbourhood
	11. % of open space in the neighbourhood 12. Per capita organised green open space for a neighbourhood 13. % of encroached/ informal area of total neighbourhood area

In neighbourhood scale, the design guidelines give importance to being sensitive about the city form and identity that will impact the overall physical environment. Neighborhoods should be designed to improve daily outdoor journeys and experiences, as the indicators shown in Table 2.3. A neighborhood designed with young children and their caregivers in mind includes a variety of uses and services that encourage outdoor activities, all within easy walking distances. Since young children have limited mobility, the guideline claims that it is practical to group diverse destinations and complementary services close together.

Recommended distances, densities and sizes of some facilities according to neighborhood layout element of ITCN design guidelines are given in Appendix B, which gives the distances for the required facilities to designate areas as child-friendly or to transform them into child-friendly zones. The design guide of India explains the required specifications of some certain facilities in detail with their hierarchy, required amount or areas, also relates all facilities with their described indicators so that it is possible to connect them (2019). The visualized version of this table is organized as shown in Figure 2.15 below, and it provides the maximum distances that any child - meaning the child residing in a household- should be from these amenities. It is seen that the required distance depends on the age and their needed facilities.

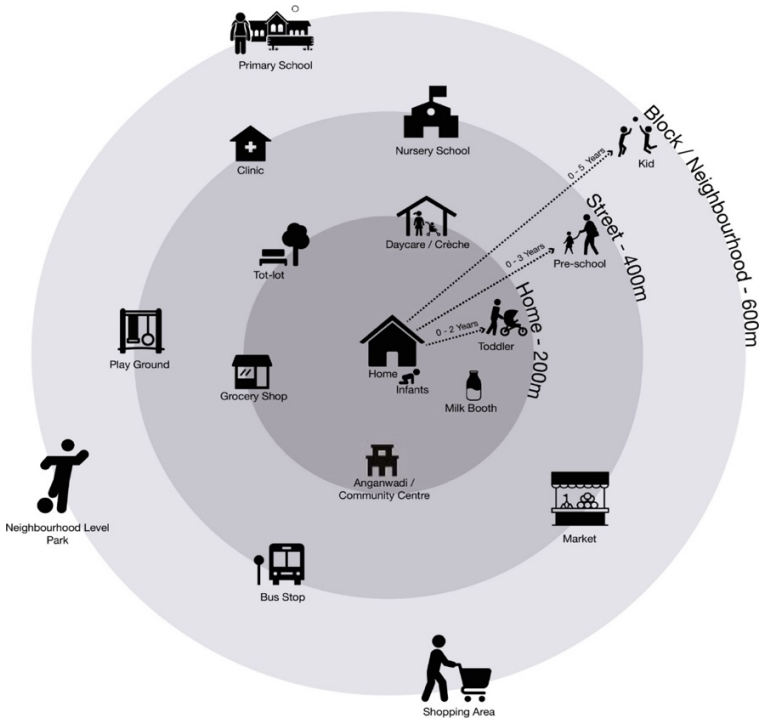

Figure 2.15 : Location and hierarchy of amenities linked to child's physical development (The Ministry of Housing and Urban Affairs of Government of India, 2019)

Table 2.4 : Indicators of the element "streets" in ITCN design guideline (The Ministry of Housing and Urban Affairs of Government of India, 2019)

Objectives Achieved	Indicators
	14. Presence of walk zone/footpath/sidewalk at significant routes in the neighbourhood. 15. Provision and quantity of public seating to stop and rest, by neighbourhood
	16. % of clear and unobstructed pedestrian footpath of total road length. 17. Presence of kerb cuts. 18. % of streets with adequate lighting. 19. Streetlight spacing in the neighbourhood. 20. Presence of cycle routes inside the neighbourhood and on major bordering roads (km would be a future indicator). 21. Encroachment on NMT roads at neighbourhood level by Vehicle Parking (%) 22. Presence of traffic calming measures in the neighbourhood and average speed of vehicles in the neighbourhood 23. % of intersections containing timed signals and lighting in the neighbourhood and along its border roads. 24. % of one-way streets in a neighbourhood. 25. % of total street length closed to 4-wheel traffic. 26. % of total street length closed to 4-wheel and 2-wheel traffic. 27. Presence of informal wayfinding in the vicinity of schools and parks. 28. Instances of observable standing water, overflowing drains, sewage.
	29. Presence of green corridors on major routes and number of corridors in a neighbourhood. 30. % of streets with decibel levels above standard 55 dB inside the neighbourhood. 31. Presence of no-honking zones in the neighbourhood.
	32. Fatality rate for pedestrian and NMT (%) 33. The number of fatal accidents occuring due to traffic in the neighbourhood.

ITCN Design Guidelines of India declares the indicators shown in Table 2.4, also 3 main steps for better streets: limit, link and share. By “limit”, the guidelines say that the use of the streets should not be dominantly for vehicles but for pedestrians and children. By “link”, the guidelines suggest to connect the destinations within the neighborhood with a clear route. By “share”, the guidelines highlight the importance of the efficiency of any street if it would give a chance to diverse users.

Car-dominant places are threats for the comfortable flow of streets; so that, the guidelines’ list to implement traffic calming measures to make roads safer for children are given below.

- Restrict unnecessary traffic movement
- Specify speed limits (around 15 km/h)
- Calm one-way traffic movement

- Use chicanes
- Create shared streets
- Use crossing or speed signs – if speed bumps are insufficient

By taking some key facilities such as primary schools, tot-lots, daycare centers, and more, which are the most visited destinations of any child, into consideration, the list to designate priority routes that link children's daily activities is given below.

- Define a pedestrian way without any obstacle with minimum 1.8 meters wide
- Lead the direction to important destinations
- Slow down the traffic and use related material on the ground
- Provide points to rest and play
- Provide variety of facilities and activities
- Use variety of directing elements
- Keep the danger away
- Take advantage of trees

Shared streets, like Woonerfs or Homezones, are residential areas where cars, cyclists, and pedestrians share the same space, promoting safety and community interaction. These streets have no clear zoning, encouraging slower driving and are designed with uniform paving, making them safer and accessible for all, including young children. Howevere the design guideline of India emphasizes the criteria when designing shared streets. The detailed table of the child-friendly street components according to India's guide is given in Appendix C, which explains the components according to their objectives. Also, each components have actions explained in detail in the guide, to provide the design components.

The design guideline gives the components under the objectives of guide which are safe streets, green streets, accessible streets, and playful and inclusive. To reach these objectives, the guide presents the required design components related to street design

which are active facade along routing, private-public interface, traffic limitations, pedestrian crossing details, lighting and wayfinding elements, street planting in accordance with shading and cooling elements, ground materials and color, ramp, border and bench details, furniture and pavement details encouraging play, and pop-up play opportunities (The Ministry of Housing and Urban Affairs of Government of India, 2019).

2.5.3 Child-Friendly Cities Planning and Design Guidelines: Israel

Another child-centered design guideline example is the one prepared by the Government of Israel and Bernard van Leer Foundation (2023). The documentation is actually a strategic plan for child-friendly cities planning and design guidelines. The thesis will focus on the design principles for child-friendly streets that are declared in the plan; also, it wil explain the idea of Israel's guideline on the child-friendly neighborhood.

The guideline highlights the importance of the land use distribution, so that, they claim that the mix use may encourage caregivers to walk which directs to the child-friendly transportation mode. Basically, according to the design guide, the child-friendly neighborhood should provide cluster of child-friendly facilities so that they are near for every region. Furthermore, open spaces for play should be designed near residentials.

The design guide separates the street guidelines into two sections. While the first section gives the directions about safer spaces that are used by pedestrians and children such as walking paths, resting places and their details. The second part gives the required things for the places where are used by vehicles like traffic calming measures.

Table 2.5 : Child-friendly actions according to the design guide of Israel (Government of Israel, 2023).

Components	Actions
Mobility and stationary spaces	Wide, safe sidewalks near child-friendly facilities Anti-slip materials for strollers Accessible crosswalks Prioritization pedestrians at parking lot entrances Safety features in urban and high-rise areas Stroller-friendly step streets Elevators or escalators
Frontage zone	Accessible signage Living fences Play elements
Pedestrian through zone	Continuous, accessible pathways enhanced with playful, low-budget elements
Steps for play and rest	Playful interaction and rest in step designs
Recreational and street furniture zones	A pleasant walk with trees Variation of street furniture Defined street furniture zones Locally inspired design elements
Safe mobility spaces	Two-way streets when suitable Implemented traffic-calming measures
Compact intersections	Street-height crosswalks Raise crosswalks for visibility Expand street corners and improve visibility

The Child-Friendly Cities guidelines of Israel defined certain indicators in different scales and for different elements and each indicator was separated into three. The actions would be defined as robust, functioning or disappointing according to the guidelines. For streets, there are three objectives defined: safety in the vicinity of early childhood facilities (meaning limitations on vehicular traffic near children-related facilities), safety in the vicinity of parking lots (meaning limitations on the parking lot amount and designing their connections with streets to prioritize safety and minimize potential hazards), and experiences and enriching learning opportunities while walking (meaning streets with creative experiences or opportunities for enriched learning).

Fully reached safe streets near early childhood facilities gives vehicle-free zones as well as traffic-calming measures in surroundings. While widening the pedestrian places near these facilities and traffic calming implementations in dangerous areas are defined as functional, no implementation of traffic calming measures is defined as disappointing for a safe street. Complete safe parking lot entrances are when they are limited and their surroundings are highlighted with warnings. While only the design of the surrounding area warns of possible dangers is defined as functional, no limitation on parking lot or no-thought design is defined as disappointing for a safe

parking lot surrounding. For the best experiences and enriching learning opportunities while walking, at least two sections offering children enriching experiences are considered in the street. While only one section is enough for a street to be functional, no section for any experience means disappointing in the guideline.

2.5.4 Streets for Walking & Cycling: African Cities

Not only child-centric, but also human-centric street design approach is enabling and forcing people to walk in the streets more comfortably. So that, some of the governments and institutions also focuses on walkability of the streets and try to increase the walkability and walk comfort of people. The collaboration of UN-Habitat and Institute for Transportation & Development Policy (ITDP) highlighted how low-cost, design-based interventions—such as road safety improvements and dedicated infrastructure—can make walking, cycling, and modern public transit systems safer and more attractive for urban populations in African cities, as they rapidly urbanize. A street design guide for the African cities was prepared by the efforts of UN-Habitat and ITDP, with the name of Streets for Walking and Cycling: Designing for Safety, Accessibility, and Comfort in African Cities (2018).

The guide explains the directions in 6 different titles: “footpaths”, “crossings”, “cycle tracks”, “intersections”, “street network & land use”, and “design process”. While the first 4 topics primarily focus on detailed design factors, the title “street network & land use” addresses higher scale concern by taking a more holistic view of the urban environment. This section goes beyond individual design elements to examine the broader structure of the urban fabric and how land use decisions relate to transportation systems. Additionally, the explanations under the title “design process” highlights how planning and design occur over time, emphasizing the roles of different stakeholders and the decision-making processes involved. Together, these topics create a more integrated and comprehensive understanding by linking various scales and perspectives within urban planning and design.

The guide claims that any walkway should be continuous, at least 2 m width, and available for different activities such as street vending without interrupting the pedestrian mobility (2018). The footpath is also more useful and open for belonging when it is planned with zoning system which includes frontage, pedestrian and

furniture zone. An example of the zoning system is described as shown in the Figure 2.16, which tries to explain zoning provides uninterrupted walking space by providing various types of areas.

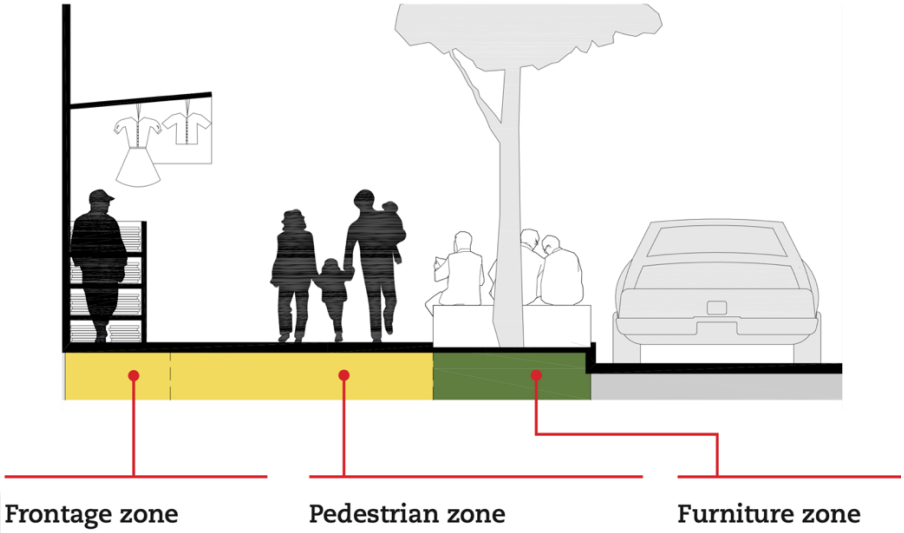

Figure 2.16 : An example of the zoning system of walkways (Kost et al., 2018)

The guide also gives the details about the footpath width that they should differ according to the land use, for the necessities may differ. Even though the reason is not given clearly, the guide mentions that the width of pedestrian zone should be wider when there is a commercial activity. Thus, the guide claims that commercial activities may bring more people walking, so that a wide footpath will be a need. Also, a sidewalk should be elevated but not more than 15 cm as the guide mentions. Any uneven surface may cause drainage problems and puddles which make it difficult to walk on. The issue of pedestrian paths providing shade, especially with trees, was particularly emphasized, for the guide is created for African cities which have a humid climate or harsh daytime sun. Furthermore, when it is night time, continuous lighting is suggested for preventing unsafe walking experiences. Lastly, continuity of a pedestrian has been given importance in the designs of ramps, vendings, bus stops and parking bays. As it is showed in Figure 2.17, it has been suggested that any function on the sidewalks should be included in the design without affecting walking comfort and continuity.

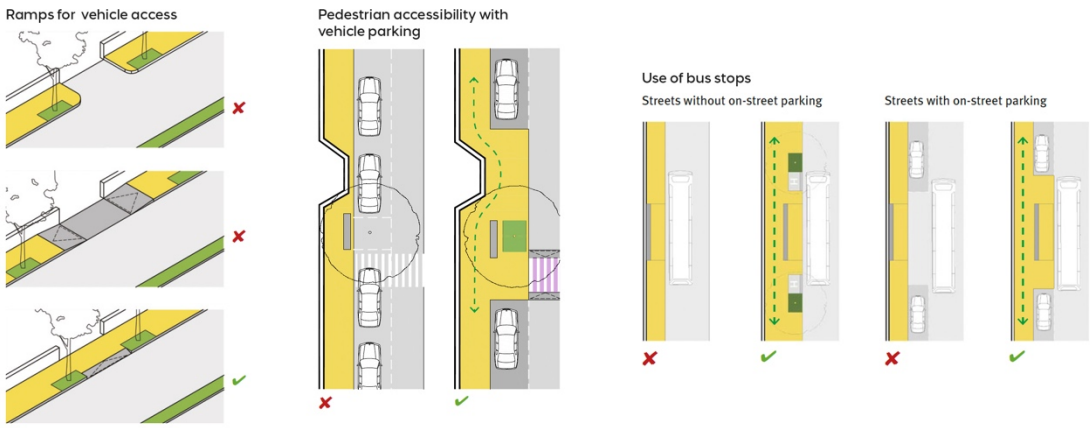

Figure 2.17 : Integrating sidewalk elements to ensure pedestrian comfort and continuity (Kost et al., 2018)

The guide has stated its recommendations for pedestrian crossings in terms of location, frequency and method. Pedestrian crossings should be placed in places with heavy pedestrian traffic (e.g. stops, shopping mall entrances) and at 50-100 m intervals; they should be designed with signals or speed-reducing ramps for safety. Since overpasses and underpasses are not preferred by pedestrians, at-grade crossings are both more effective and more efficient in terms of resource use. Also, raised crossings are highlighted for they increase pedestrian safety by requiring vehicles to reduce speed.

Wide turning areas allocated for vehicles, inadequately aligned intersections and the lack of sufficient crossing areas make the area unsafe. The guide suggests elevated intersection designs that will reduce the crossing distance. The design details for the elevated intersection are given with explanations in Figure 2.18. In this visual, it is mentioned that the radius standard of the turning curves and the pedestrian crossing lines should follow the sidewalks. At the same time, since the elevated intersection on the vehicle road is mentioned, the recommended rate for the slope is given between 10% and 20%. It is mentioned in the guide that if the ramp is to be applied on the pedestrian area, its slope should not exceed 8%.

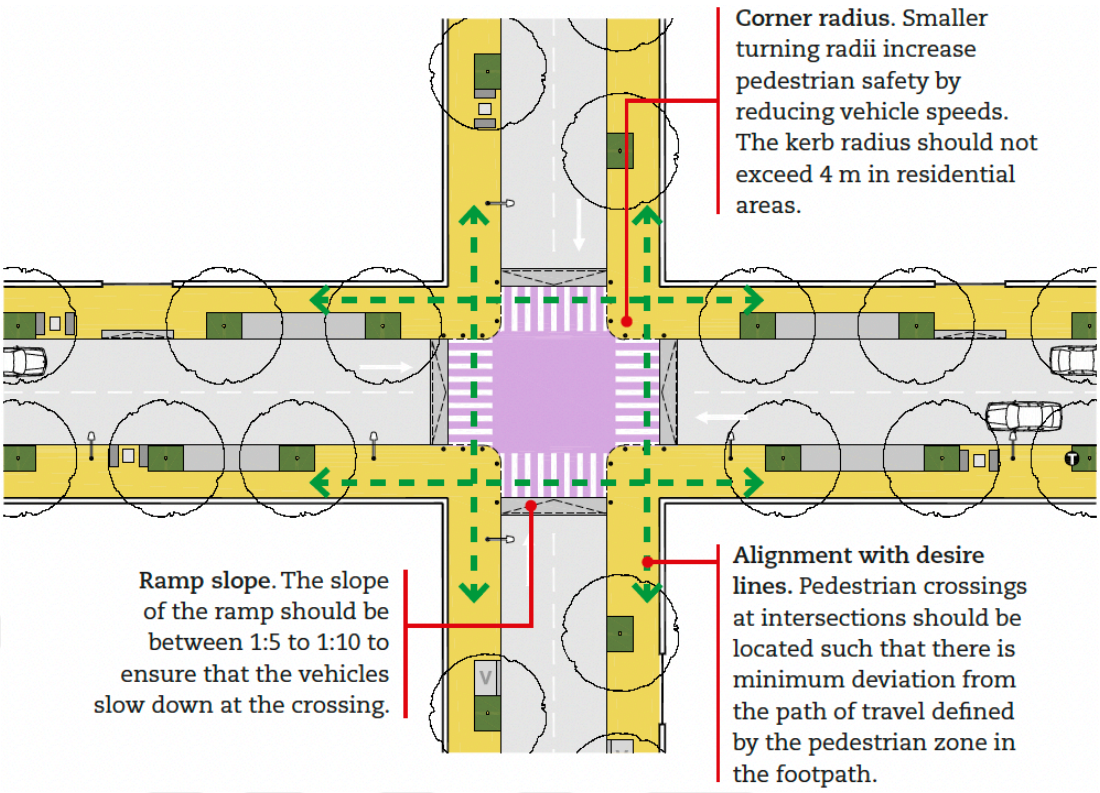

Figure 2.18 : Design principles for elevated intersections (Kost et al., 2018)

The design guide also specifies the relationships between street connections, block lengths and walking opportunities. Since short-distance blocks provide direct and short access, they will encourage walking or cycling alternatives. In large blocks, it is recommended to provide sections that will enable pedestrian access. In addition to the distances of the blocks, the variety of functions included in the blocks affects pedestrian density and therefore the intensity of walking activity. In this sense, land use that includes housing, trade and workplaces together will reduce travel distance and encourage walking or cycling. Along with this, active facades increase pedestrian and cycling safety by allowing shop owners and residents to observe the street. Therefore, administrations that aim to increase pedestrian and cycling use should make it mandatory for buildings to be constructed with active facades up to the parcel border.

The pedestrian and bicycle-focused design guide, prepared in collaboration with UN-Habitat and ITDP, offers comprehensive recommendations on how to make urban mobility safer, more accessible and more comfortable with low-cost and design-based interventions. Design details such as the continuity, width, shading, lighting and consideration of various functions of pedestrian paths, as well as elements such as the safety of intersections and transition areas, stand out as the cornerstones of human-

centered street design. The guide offers an important roadmap for inclusive and sustainable urban design that encourages pedestrian and bicycle transportation with its holistic perspective at both micro (design details) and macro (urban pattern and land use) scales.

2.5.5 Cities Safer by Design, WRI

Motor vehicle-oriented street designs in many cities pose serious safety risks, especially for vulnerable road users such as pedestrians, cyclists and public transport users. However, these areas can be made much safer with a design approach that considers all users. Approximately 1.24 million people lose their lives due to traffic accidents worldwide each year, and the vast majority of these deaths are pedestrians and cyclists in developing countries (Welle et al., 2015). This situation reveals how vulnerable groups, especially children, are unprotected in urban transport systems. The rapid increase in individual motor vehicle ownership, especially in countries with emerging economies, reinforces the vehicle-oriented planning trend in cities; this negatively affects pedestrian safety.

The Cities Safer by Design report, developed by the World Resources Institute (WRI) in 2015, stands as a comprehensive street design guide that emphasizes evidence-based interventions for enhancing urban traffic safety. The "safe system" approach proposed to increase traffic safety aims to adopt designs that prioritize user safety by transforming not only new residential areas but also existing street textures (Welle et al., 2015).

This guide contributes significantly to the growing body of urban design literature by presenting key design principles—such as traffic calming measures, safe pedestrian and cycling networks, and integrated public transport access—that align with the safe system approach to road safety. It develops evidence-based approaches to improving urban safety by providing examples of pedestrian and bicycle-first street design practices that encourage public transport, reduce speed, and limit unnecessary vehicle use. Within this thesis, the WRI guide is referenced as a foundational design framework, particularly for its relevance to child-friendly and inclusive street environments in rapidly urbanizing contexts. The guide adopts the following design principles:

- Reducing the dependence on vehicles in urban planning and reducing vehicle speeds to safe levels supports safe access to public spaces, especially for vulnerable groups such as children.

- Traffic calming practices, which aim to reduce vehicle speeds and create safe crossings for pedestrians, are considered a fundamental tool in creating child-friendly streets.

- Making main arterial roads that host heavy vehicle traffic safe for all users—pedestrians, cyclists and public transport passengers—a critical step in ensuring inclusive urban mobility.

- Connected bike paths that surround the city as a network and prioritize user safety are an important physical infrastructure component that supports the independent mobility of children and young people.

- Sidewalks, crossings and similar infrastructure elements that ensure pedestrian safety, as well as the right of children to public spaces where they can freely play and socially interact, are fundamental elements of child-friendly urban design.

- Safe access to public transport lines, stations and stops; It strengthens social equality by increasing freedom of movement and accessibility for both children and their accompanying individuals.

2.6 Chapter Evaluation

The thesis aims to question the sustainability of "child-friendly" identities after the decision-making and implementation stages of child-friendly street transformations. While it is especially difficult to change the mind-set in metropolitan cities as they are already vehicle dominated, the study first investigates the importance of children and play in public spaces. Since play contributes not only physically but also mentally to child development, children's right to play should be defined not only in private spaces but also in public spaces. The fact that cities produce child-focused policies in different areas and offer child-friendly design solutions is an action that will increase the well-being of not only children but all city residents. For this reason, the perspective of

“design for children, design for everyone” has taken its place in the literature. The impact of the concept of child-friendly city is not only in the literature, but also spreading with the activation of child-friendly policies by many metropolitan cities.

In the literature review of the research, concepts like “child-friendly city” and “child-friendly street transformations” were compiled and according to the information obtained from child-friendly design guides, what should be considered in order to create child-friendly areas was explained. This cross-scale literature review demonstrates that examining a space or project from only one scale or perspective may not be sufficient in the creation or evaluation process. According to the insights gathered from the literature, in order for the street transformations to be evaluated to be “child-friendly”, an examination should be made from the decision-making process to the details of the pavement stone on the ground in the projects in question. The process of the street transformation includes from the beginning of any project which is the decision making to the use of the implemented area. The process of the street transformations involves how and according to what criteria decisions are made, the methods used in fieldwork, who is involved in these efforts, and whether there are evaluations of the outcomes.

Within the scope of the thesis, five different child-friendly urban design guides were examined during the literature review phase. However, for the methodological framework of the research, parameters from three of these guides were selected for direct inclusion in the evaluation process. The primary reason for the selection of these three guides is their systematic structure and the clarity and measurability of the parameters they propose. In addition, all three were developed under the consultancy of the Bernard van Leer Foundation (BvLF), yet they reflect different perspectives on different scales offering a multi-scalar perspective essential for comparative evaluation. The remaining two guides, although not included directly in the methodological framework, contributed to the overall assessment by informing the conceptual background of child-centered design and offering complementary perspectives. Thus, while only three guides formed the analytical foundation of the methodology, insights from all five were considered to ensure a comprehensive and well-informed evaluation process.

The parameters derived from the three selected design guidelines were compiled, systematically analyzed, and grouped, as presented in Table 2.5. This compilation

process involved collecting the parameters defined at different spatial scales by each guideline and identifying overlapping or conceptually similar elements. Through cross-analysis, parameters that addressed same objectives across the different sources were consolidated into singular, concise criteria. Parameters that appeared in only one of the guides, and thus had no counterparts in the others, were retained as individual criteria and also included in the overall evaluation framework. This approach ensured a comprehensive yet streamlined set of assessment parameters rooted in diverse but complementary perspectives.

The compilation includes the criteria regarding the process from NACTO & GDCI (2019) design guide and the design guide prepared by the Government of India (2019). No criteria for the transformation process were found in the guide prepared by the Government of Israel (2023), therefore it was not evaluated in the compilation of the parameters. The table basically brings together the parameters related to the decision-making process in two different design guides and obtains a series of parameters that are a mixture of all of them but simplified. For example, when Table 2.6 is examined, the parameters “Showcase possibilities” and “Temporarily open streets to children” specified in the NACTO & GDCI design guide (2019) have similar contents to the parameters “Quick trial-and-error solutions” in the Indian design guide (2019), and therefore they have been combined under a single parameter and taken their place in the evaluation parameters. With the aforementioned compilation method, the parameters that should be considered in the decision-making process of the child-focused design guides in the literature review are listed in Table 2.6. According to the table, 7 different parameters that should be considered in the decision-making process while creating child-friendly spaces have emerged. These parameters will be used as process evaluation parameters in the evaluation scale section of the research method.

Table 2.6 : Compilation of the parameters for the decision making process from the child-centred design guidelines.

NACTO & GDCI (2019)	India (2019)	Israel (2023)	The Parameters for Evaluation
Prepare an action plan.	-	-	Prepare an action plan.
Collaborate with multiple stakeholders.	Collaborative efforts, alliances for public spaces, and self-directed initiatives	-	Fostering inclusive participation through partnerships and collective action
Involve children and caregivers in the process.	-	-	Involve children and caregivers in the process.
Experiment with various analysis and decision-making methods.	A combination of short-term, hands-on action, and long-term strategies	-	Adaptive planning, balancing experimental approaches
Showcase possibilities.	Quick trial-and-error solutions	-	Encourage experimentation through temporary interventions and showcase potential solutions
Temporarily open streets to children.		-	
-	Oversight and coordination of place	-	Oversight and coordination of place
-	Evaluation of expenses and	-	Evaluation of expenses and advantages

Child-focused design guidelines also mention parameters for the creation of child-friendly neighbourhoods. According to design guides, in addition to parameters that include upper-scale information such as accessibility and land use that can meet the needs of children and their caregivers in child-friendly neighbourhoods, attention should also be paid to details such as facade details and decisions that will restrict vehicle use.

One of the thesis objectives is to seek for the preservation of the "child-friendly" identity in the event of permanent implementation of child-friendly street transformations. In terms of this, the criteria at the neighbourhood scale, where a higher-scale perspective will be provided in addition to a single scale for street transformation, will guide the inter-scale evaluation. The parameters that will help in the inter-scale evaluation and ensure that the neighbourhood is evaluated in terms of child-friendliness (Table 2.7), were created by compiling the parameters of the neighbourhood scale in three different child-focused design guides. The amount and distance of environmental factors such as green areas, children's playgrounds, schools around the street where the transformation takes place, and their relations with the transformed area will bring an inter-scale interpretation for upper-scale interpretation

other than the point transformation and for understanding the suitability of the neighbourhood in terms of child-friendliness.

The neighbourhood scale parameters of three different design guides prepared with a focus on children in the literature review were compiled as seen in Table 2.7. The parameters obtained from the design guides that provided content on similar topics were brought together to explain that different design guides addressed the same topic. For example, in Table 2.7, the content of the parameter "Reduce trip journey by clusters" in the design guide prepared by NACTO & GDCI (2019) overlaps with the distance limitations specified by India (2019) for various facilities and the parameter "Near child-friendly facilities" by Israel (2023). For this reason, instead of taking each as a separate parameter, the ones that provided similar content were brought together in a single parameter and presented in the rightmost column.

Table 2.7 : Compilation of neighbourhood scale criteria obtained from three different child-centered design guides.

NACTO & GDCI (2019)	India (2019)	Israel (2023)	The Parameters for Evaluation
Reduce trip journey by clusters	Minimum 300 m to existing open spaces	Near child- friendly facilities	Reduce trip journey with keeping the distances (minimum 300 m to open spaces, nursery school, health facilities, and minimum 600 m to primary school)
	Minimum 300 m to nursery school		
	Minimum 600 m to primary school	Open spaces for play near home	
	Minimum 300 m to existing health facilities		
Local mobility parks	-	-	Local mobility parks
Low speed regions in child-densed areas	Set speed limits	Traffic-calming measures	Traffic-calming measures
Pedestrian-first or car-free zones in pedestrian densely areas	Prevent unnecessary traffic	Encourage walking	Pedestrian-first zones to encourage walking
Low-emission zones	-	-	Low-emission zones
	Active facades	-	Active facades
	Windows and main doorways	-	Windows and main doorways

The child-friendly criteria at the compiled neighborhood scale can be grouped into three different groups. This grouping is summarized in Table 2.8 as follows: the presence of certain facilities in the neighborhood, their distances and walking accessibility are evaluated under the land use and accessibility group; traffic restrictions and pedestrian priority areas are evaluated under the traffic calming group; and active facades and streets are evaluated under the activity analysis group.

Table 2.8 : Compilation of neighbourhood scale criteria obtained from three different child-centered design guides.

The Parameters for Evaluation	Measurement Groups of Parameters
Reduce trip journey with keeping the distances (minimum 300 m to open spaces, nursery school, health facilities, and minimum 600 m to primary school)	Land Use and Accessibility
Local mobility parks	
Traffic-calming measures	Traffic Calming
Pedestrian-first zones to encourage walking	
Low-emission zones	
Active facades	Activity Analysis
Windows and main doorways	

In 3 different design guidelines focusing on children and their caregivers, parameters are given in the design details for streets to be child-friendly. These parameters explained in the literature review are brought together and simplified in this section, and a parameter list is created as given in Table 2.9, which provides the integration of the three guides. When the parameters of the design details in the three guidelines are listed together and simplified, 36 parameters that need to be considered in child-friendly street design emerge.

It has been determined that some details are encountered in more than one subject among the parameters. For example, while obstacles are included in the parameters related to pedestrian crossings, they can also be among the subjects that can affect walking comfort on the sidewalk or disabled access. In addition to the measurement details related to the seating elements, their relationships with trees and playgrounds are also included among the criteria, and the parameters related to the seating elements are detailed.

Table 2.9 : Compilation of design scale criteria obtained from three different child-centered design guides.

NACTO & GDCI (2019)	India (2019)	Israel (2023)	The Parameters for Evaluation
Short crossings at least 1.8 m wide, and ideally 2.4 m wide)	-	-	Short crossings at least 1.8 m wide, and ideally 2.4 m wide)
Frequency of crossings (every 50 to 100 m, no more than 200 m)	Crossings with regular intervals	Street-height crosswalks (every 50-100 m)	Pedestrian crossings every 50 to 100 m
Legible crossings (markings should be at least 3 m wide)	Visible and bright colored crossings	-	Visible, wide and birght crossings
At-grade crossings (a rised to match the sidewalk level)	-	Raised crosswalks	Raised crosswalks
Visibility of crossings (No parking within 6 to 8 m of intersections, stop bars at least 3 m from crossings, and minimize visual obstructions within 3 to 5 m of crossings)	No obstruct on crossings	Accessible crosswalks	No parking within 6 to 8 m of intersections, stop bars at least 3 m from crossings, and minimize visual obstructions within 3 to 5 m of crossings
	Parked cars far away		
-	Visible corners	Expanded street corners	Visible corners
Clear walkpath (at least 1.8–2.4 m wide in residential settings, 2.4–4.5 m wide in downtowns, school zones, or commercial areas)	-	Continuous, accessible and obstruct-free pathways	Continuous, accessible and obstruct-free pathways (at least 1.8–2.4 m wide in residential settings, 2.4–4.5 m wide in downtowns, school zones, or commercial areas)
Pedestrian ramps (maximum slope of 10%, ideally 8%)	Inclination ramps	-	Ideal pedestrian ramps (maximum slope of 10%, ideally 8%)
-	Chicanes	-	Chicanes
Street furniture zone on sidewalks	-	Recreational and street furniture zones	Street furniture zones
Appropriate seating dimensions	Bench types, seating with free space at least 1.8 meters	-	Appropriate seating dimensions
Variation of seating materials		-	
Enough seatings (every 50 to 100 m)	-	-	Enough seatings (every 50 to 100 m)
Seating in various locations	-	-	Seating in various locations
-	Seating with shading	-	Seating with shading
-	Seating with shelter and protection	-	Seating with shelter and protection
Street lighting	Low-level lighting	-	Appropriate lighting
	Lighting with regular interval (at least every 30 m)	-	
	No shadow zones	-	
Wayfinding	Eye level of 95 cm	-	Child-friendly wayfinding solutions
	Bright and recognizable objects with interval	-	
	Landmarks	-	
Trash cans	-	-	Trash cans
Public toilets	-	-	Public toilets
Drinking fountains	-	-	Drinking fountains
Wi-fi and charging	-	-	Wi-fi and charging
-	Shading and cooling elements	-	Shading and cooling elements
Incorporate art and play with seatings	-	-	Incorporate art and play with seatings
Different types of learning	-	-	Different types of learning

Table 2.9 (continued) : Compilation of design scale criteria obtained from three different child-centered design guides.

NACTO & GDCI (2019)	India (2019)	Israel (2023)	The Parameters for Evaluation
Creative play opportunities	Playful furniture	Play elements	Creative play opportunities
	Pop-up playing	Steps for play and rest	
Buffer zone at sidewalks	Various plant zones	-	Plant zones in different places
Plant more trees		-	
Co-locate nature		-	
Consider children's height for connection with nature	Different height trees	-	Different height trees for kids to enjoy
Kids engaging with natüre		-	
Plant species for kids		-	
Room for insects and spiders	-	-	Room for insects and spiders
-	Indigenous and local species	-	Indigenous and local species
-	Retain existing trees	-	Retain existing trees
Engaging surfaces on sidewalks	Colorful patterns	-	Engaging colorful, different patterns on sidewalks
	Different types of patterns	-	
	Sidewalk games	-	
-	Avoid uneven ground cover materials	-	Child-friendly ground cover materials
-	Child-friendly materials	Anti-slip materials for strollers	
-	No obstruct in public realm	-	No obstruct in public realm
-	Obstacles between different pavements	-	Obstacles between different pavements
-	Low fences	-	Low fences
-	Boulders with min 1.2 m spacing	-	Boulders with min 1.2 m spacing

The 36 parameters compiled from child-focused design guides include very detailed information and measurements such as floor material, border details, dimensions, and so on. These criteria, prepared in detail, can be combined under some topics and evaluated as details under those topics. The grouping process was conducted based on the specific spatial or functional attributes that each parameter addresses, allowing for a more structured and thematic evaluation. Accordingly, parameters were classified under common categories reflecting the characteristics they evaluate and the elements they pertain to. Table 2.10 indicates which parameters can be detailed under which groups. The groups associated with the parameters are specified as pedestrian crossings, walk paths, urban furniture, play opportunities, green opportunities and design materials.

Table 2.10 : Grouping of design criteria at design scale.

The Parameters for Evaluation	Measurement Groups of Parameters
Short crossings at least 1.8 m wide, and ideally 2.4 m wide)	Pedestrian Crossings
Pedestrian crossings every 50 to 100 m	
Visible, wide and bright crossings	
Raised crosswalks	
No parking within 6 to 8 m of intersections, stop bars at least 3 m from crossings, and minimize visual obstructions within 3 to 5 m of crossings	
Visible corners	Sidewalks
Continuous, accessible and obstruct-free pathways (at least 1.8–2.4 m wide in residential settings, 2.4–4.5 m wide in downtowns, school zones, or commercial areas)	
Ideal pedestrian ramps (maximum slope of 10%, ideally 8%)	
Chicanes	
Street furniture zones	Urban Furniture
Appropriate seating dimensions	
Enough seatings (every 50 to 100 m)	
Seating in various locations	
Seating with shading	
Seating with shelter and protection	
Appropriate lighting	
Child-friendly wayfinding solutions	
Trash cans	
Public toilets	
Drinking fountains	
Wi-fi and charging	
Shading and cooling elements	
Incorporate art and play with seatings	Play Opportunities
Different types of learning	
Creative play opportunities	
Plant zones in different places	Green Opportunities
Different height trees for kids to enjoy	
Room for insects and spiders	
Indigenous and local species	
Retain existing trees	
Engaging colorful, different patterns on sidewalks	Design Materials
Child-friendly ground cover materials	
No obstruct in public realm	
Obstacles between different pavements	
Low fences	
Boulders with min 1.2 m spacing	

3. RESEARCH METHODOLOGY AND CASE STUDY

The two objectives of the study are to determine parameters for measuring the processes and design details of the applications and to define how these parameters can be measured or realized. The literature review provides a comprehensive explanation of the concept of child-friendly cities, child-friendly street transformations, and their various versions, as well as examples of local and central governments' child-friendly approaches. While the literature review establishes the conceptual framework by defining the concepts of children and play within the context of urban areas and urban planning, it helped in creating evaluation criteria by compiling and collating various design guides that would guide the evaluation method in the thesis research. The study's methodological approach was guided by the design guidelines set by countries in strategic plans aimed at creating child-friendly cities, along with the design guidelines for children's streets published by organizations such as NACTO and GDCI. These guidelines were compiled to inform the design methodology. The methodology of the study is based on combining common and unique criteria from the compiled design guidelines to create child-friendly spaces. Although the scales of the compiled guides differ from the scale of this study, they include criteria relevant to the thesis' scale in their content. This chapter will explain the research methodology by how the evaluation criteria is evolved and the case study with its different scale details.

3.1 Determination of Evaluation Criteria

One of the objectives of this thesis is to define how child-friendly street transformation can be measured or realized. In this section, the permanent child-friendly street transformation in Zümrütevler, which was determined as the study area in line with the aim of the thesis, will be evaluated. This transformation, which was implemented in two phases for the first time in Istanbul, will be analysed under certain criteria. As stated in the chapter evaluation of the literature review, the criteria in the content of the design guides prepared with a focus on children, regarding the thesis topic and the evaluation of the study area, have been brought together. All parameters were

eliminated for this study and new evaluation parameters were obtained by gathering them as actions under certain topics.

As a result of the evaluation with these parameters taken at different scales, it is aimed to reveal the evaluation of the child-friendly street transformation application in Zümrütevler, whose research was conducted, with inter-scale approach. The evaluation of Zümrütevler Neighborhood in terms of child-friendly principles, based on the parameters defined at the neighborhood scale, as well as the assessment of both the decision-making stage and the post-implementation design details, will provide insight into the relationship between different spatial scales. This analysis will also contribute to understanding the connection between upper-scale planning decisions and lower-scale design implementations through the lens of the case study.

Although the parameters were determined in line with the guidance of the criteria in the design guides and the evaluation scale was created with these parameters, comparing the results obtained from the evaluation parameters with the use of space and user movements will emphasize the effect of the application in real life and daily flow more strongly. For this reason, space use and user observations were also included in the research method together with the determined evaluation parameters. In these observations, it is aimed to understand how the users use the space in addition to what the evaluation criteria suggest and whether the expected results according to the criteria are achieved in the use of space.

The section will explain the evaluation criteria and how these criteria will be measured for the evaluation of the study area determined within the scope of the thesis. The evaluation criteria aimed at finding answers to the thesis research questions are grouped in a way that will present three different scale evaluations. The neighbourhood-scale evaluation parameters to be explained in this section will ensure that the Zümrütevler neighbourhood, where the application to be researched is located, is evaluated in terms of a child-friendly neighbourhood. The process evaluation method that will guide the evaluation of the transformation process and decision-making stages of the two-phased child-friendly street transformation application will be explained together with the parameters. Finally, in order to measure and evaluate the successful implementation of the child-friendly street transformation with details at the design scale, the design detail evaluation criteria and how these criteria can be measured for the study area will be explained. In addition to the evaluations made with

child-friendly criteria, the details of the user observations made in the space are given in this section in order to understand whether the use in the area is really child-oriented.

3.1.1 Evaluation criteria for decision making process

One of the aims of this thesis is to understand the sustainability of the child-friendly identity for the permanent forms of child-friendly street transformations implemented in two phases. In this context, it has been understood in the literature review that examining the transformations not only as point applications but also from the decision-making process to the implementation process is a more comprehensive method. In this sense, a method specific to the study was developed to examine all stages from the decision-making process to the implementation process, which is one of the research questions of the thesis. In the chapter evaluation of the literature review, the criteria determined by the three different children's design guides investigated in this study regarding process management were compiled and simplified, and a new parameter list including the criteria of all three guides was created. This parameter list created will be used in the evaluation of the process of Zümrütevler child-friendly street transformation determined as a case study. Table 3.1 presents the process evaluation parameters along with the appropriate data collection methods identified for each. The table outlines how each parameter will be measured and the type of data required for the assessment. Since the process evaluation parameters question the steps followed in the decision-making phase rather than measurement, they can be questioned through interviews with the implementers of the research and application (Maltepe Municipality as the local government and Superpool as the contractor company).

Table 3.1 : Data collection methods of each process evaluation parameter.

The Parameters for Evaluation	Method
Prepare an action plan.	Documents collected from institutions, interviews with the local government and the contractor company
Fostering inclusive participation through partnerships and collective action	Documents collected from institutions, interviews with the local government and the contractor company
Involve children and caregivers in the process.	Documents collected from institutions, interviews with the local government and the contractor company
Adaptive planning, balancing experimental approaches	Documents collected from institutions, interviews with the local government and the contractor company
Encourage experimentation through temporary interventions and showcase potential solutions	Documents collected from institutions
Oversight and coordination of place	Interviews with the local government and the contractor company
Evaluation of expenses and advantages	Interviews with the local government and the contractor company

After the data on the parameters are collected through research and interview methods, it will be defined whether the information obtained meets these parameters or not, and 1 point will be recorded for each parameter based on these definitions. As can be seen in Table 3.2, the case study will have a score for this evaluation as a result of the reviews according to whether the 7 criteria are met or not. Thus, it will be possible to measure how successful the application is in the evaluation according to the criteria from the design guidelines.

Table 3.2 : Measuring the success of the case study in terms of the evaluation parameters.

The Parameters for Evaluation	Provided (1)	Not provided (0)	Score (/7)
Prepare an action plan.			
Fostering inclusive participation through partnerships and collective action			
Involve children and caregivers in the process.			
Adaptive planning, balancing experimental approaches			
Encourage experimentation through temporary interventions and showcase potential solutions			
Oversight and coordination of place			
Evaluation of expenses and advantages			
		Total	**0**

3.1.2 Evaluation method for project's surroundings

Interpretation between scales is important in terms of planning practices. In addition to the point-by-point evaluation of the case study to be evaluated within the scope of

this thesis, it would be meaningful to make an evaluation at the neighborhood scale. With the neighborhood assessment, it will be determined that this transformation has taken place in a neighborhood that is already child-friendly or that perhaps the first step has been taken towards making the neighborhood child-friendly. This assessment includes the amount and distance of environmental factors such as green areas, playgrounds, schools, etc. in the neighborhood where the transformation took place, and their relationship with the transformed area. In the chapter evaluation of the literature review, the criteria determined by the three different children's design guides researched in this study regarding process management were compiled and simplified to create a new parameter list that includes the criteria of all three guides. This parameter list will be used in the evaluation of the Zümrütevler neighborhood. Table 3.3 presents the measurement methods of the parameters to be used in the assessment of the neighborhood for each parameter. In order to understand the child-friendliness of the neighborhood according to the evaluation parameters, the methods include land use and accessibility analyses of the facilities mentioned in the parameters, traffic analysis and interview with Maltepe Municipality, the project coordinator.

Table 3.3 : Data collection method of the parameters for neighbourhood scale.

The Parameters for Evaluation	Measurement Methods
Reduce trip journey with keeping the distances (minimum 300 m to open spaces, nursery school, health facilities, and minimum 600 m to primary school)	Land use and accessibility analyses
Local mobility parks	
Traffic-calming measures	Traffic analysis, interview with Maltepe Municipality
Pedestrian-first zones to encourage walking	
Low-emission zones	
Active facades	Activity analysis
Windows and main doorways	

After the analyses determined as the measurement method of the parameters have been completed, the specific evaluation method has been determined whether the parameters are met for the neighborhood according to the results of the analyses. According to the analysis data, 1 point will be recorded for the cases where the parameters are met and a score will be given out of 7. As seen in Table 3.4, the case study will have a score for this evaluation as a result of the case study examinations according to whether the 7 criteria are met or not. According to this score, the percentage of the neighborhood that is child-friendly will be evaluated in line with the parameters taken from the design guidelines.

Table 3.4 : Measuring the child-friendliness of the neighbourhood in terms of the evaluation parameters.

The Parameters for Evaluation	Provided (1)	Not provided (0)	Score (/7)
Reduce trip journey with keeping the distances (minimum 300 m to open spaces, nursery school, health facilities, and minimum 600 m to primary school)			
Local mobility parks			
Traffic-calming measures			
Pedestrian-first zones to encourage walking			
Low-emission zones			
Active facades			
Windows and main doorways			
		Total	0

3.1.3 Evaluation method of design detail scale

The thesis has determined its methods with research questions that question the post-implementation status of child-friendly street transformations from decision-making processes, how and according to what these stages can be measured, and the relationship between these measurements and usage characteristics. In this sense, it is necessary to examine the permanent post-implementation status of child-friendly street transformations realized in two phases at the design scale. The evaluation of the space together with its usage characteristics will enable the interpretation of the results obtained from the parameters obtained from the design guidelines together with human movements and specific to the space.

Design criteria prepared with reference to three different child-friendly design guidelines will be used as a method for making assessments on this scale. There are 36 criteria in question and Table 2.9 shows the groups under which they can be detailed. Table 3.5 explains which measurement methods will be used to evaluate the design criteria in the case study of Zümrütevler child-friendly street transformation. Observation, counting and measurement in the field methods will be used to measure the design criteria in the case study evaluation. These measurement methods will be carried out and evaluated under the headings where the parameters are grouped.

Table 3.5 : Data collection methods of the design criteria.

The Parameters for Evaluation	Measurement Methods	Groups of Parameters
Short crossings at least 1.8 m wide, and ideally 2.4 m wide)	Measurement in the field	Pedestrian Crossings
Pedestrian crossings every 50 to 100 m	Measurement in the field	
Visible, wide and bright crossings	Observation	
Raised crosswalks	Observation	
No parking within 6 to 8 m of intersections, stop bars at least 3 m from crossings, and minimize visual obstructions within 3 to 5 m of crossings	Observation and measurement in the field	
Visible corners	Measurement in the field	Sidewalks
Continuous, accessible and obstruct-free pathways (at least 1.8–2.4 m wide in residential settings, 2.4–4.5 m wide in downtowns, school zones, or commercial areas)	Observation and measurement in the field	
Ideal pedestrian ramps (maximum slope of 10%, ideally 8%)	Measurement in the field	
Chicanes	Observation	
Street furniture zones	Observation and count in the field	Urban Furniture
Appropriate seating dimensions	Observation and measurement in the field	
Enough seatings (every 50 to 100 m)	Measurement in the field	
Seating in various locations	Observation and count in the field	
Seating with shading	Observation	
Seating with shelter and protection	Observation	
Appropriate lighting	Observation and measurement in the field	
Child-friendly wayfinding solutions	Observation	
Trash cans	Observation and count in the field	
Public toilets	Observation and count in the field	
Drinking fountains	Observation and count in the field	
Wi-fi and charging	Observation and count in the field	
Shading and cooling elements	Observation	
Incorporate art and play with seatings	Observation	Play Opportunities
Different types of learning	Observation	
Creative play opportunities	Observation	
Plant zones in different places	Observation and count in the field	Green Opportunities
Different height trees for kids to enjoy	Observation and count in the field	
Room for insects and spiders	Observation	
Indigenous and local species	Observation	
Retain existing trees	Observation	
Engaging colorful, different patterns on sidewalks	Observation	Design Materials
Child-friendly ground cover materials	Observation	
No obstruct in public realm	Observation and count in the field	
Obstacles between different pavements	Observation and count in the field	
Low fences	Observation and measurement in the field	
Boulders with min 1.2 m spacing	Observation and measurement in the field	

Analyses including the measurement of the details of the criteria under each group will be completed. According to the results of the analysis, a unique evaluation method has been determined for the permanent implementation of the child-friendly street transformation in Zümrütevler, which will be examined within the scope of the thesis research, to determine whether the design criteria are met. After the analysis results and review in each title, 1 point will be recorded for each parameter in which the design criteria compiled from the design guidelines are met and a score will be determined for that title. As can be seen in Table 3.6, when the scores for all headings are summed up, the highest score that the application will have for evaluation in terms of design criteria is 36 points. According to the evaluation with the scoring method based on the design criteria, the percentage of the area where the street transformation is implemented will be evaluated in line with the parameters taken from the design guidelines.

Table 3.6 : Measuring the child-friendliness in terms of the design criteria.

The Parameters for Evaluation	Provided (1)	Not provided (0)	Score (/36)
Short crossings at least 1.8 m wide, and ideally 2.4 m wide)			
Pedestrian crossings every 50 to 100 m			
Visible, wide and bright crossings			
Raised crosswalks			
No parking within 6 to 8 m of intersections, stop bars at least 3 m from crossings, and minimize visual obstructions within 3 to 5 m of crossings			
Visible corners			
Continuous, accessible and obstruct-free pathways (at least 1.8–2.4 m wide in residential settings, 2.4–4.5 m wide in downtowns, school zones, or commercial areas)			
Ideal pedestrian ramps (maximum slope of 10%, ideally 8%)			
Chicanes			
Street furniture zones			
Appropriate seating dimensions			
Enough seatings (every 50 to 100 m)			
Seating in various locations			
Seating with shading			
Seating with shelter and protection			
Appropriate lighting			
Child-friendly wayfinding solutions			
Trash cans			
Public toilets			
Drinking fountains			
Wi-fi and charging			
Shading and cooling elements			
Incorporate art and play with seatings			
Different types of learning			
Creative play opportunities			
Plant zones in different places			
Different height trees for kids to enjoy			
Room for insects and spiders			
Indigenous and local species			
Retain existing trees			
Engaging colorful, different patterns on sidewalks			
Child-friendly ground cover materials			
No obstruct in public realm			
Obstacles between different pavements			
Low fences			
Boulders with min 1.2 m spacing			
		Total	**0**

3.2 Case Study: Zümrütevler Square, Maltepe

The two-phased child-friendly street transformation located in the Zümrütevler Neighborhood—selected as the subject area of this thesis research—is situated within the Maltepe District. The structure and content of this section, which adopts a general-to-specific narrative framework, are outlined in Figure 3.1. As indicated in the figure, the section begins with an overview of demographic characteristics and public infrastructure data at the district scale. This is followed by an examination of the Maltepe Municipality's policy initiatives and strategic actions aimed at fostering a child-friendly urban environment. This is followed by an overview of the district administration's actions and strategies aimed at promoting a child-friendly urban environment. Subsequently, the child-friendly street transformations, which constitute the core focus of this thesis, are discussed. The section then provides a detailed explanation of two street transformation projects implemented through a two-phased design approach. Finally, neighborhood-level data concerning Zümrütevler neighborhood which includes the selected the case study area and recognized due to its high concentration of child population—are presented.

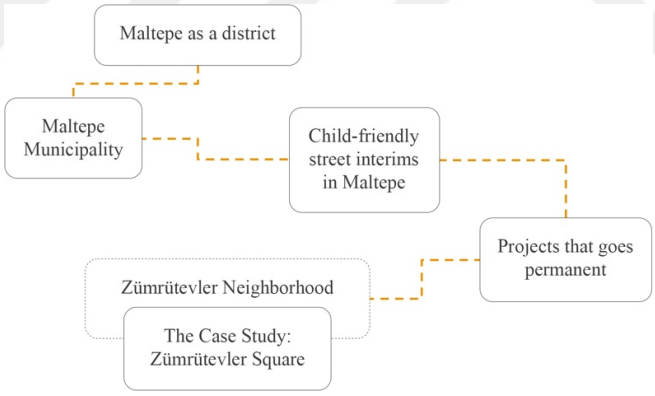

Figure 3.1 : Content flow of the section from district data to the Zümrütevler case study.

3.2.1 Maltepe as a district

Maltepe is a district located on the Anatolian side of Istanbul with a seashore and with relatively limited access to green areas. According to the Play Master Plan prepared by Istanbul Play of IMM, the amount of active green spaces per capita in Maltepe is 5.4 m², and the total green space per capita is 7.19 m²—both falling below the 10 m² threshold, which is considered a low value (2024). While the population of Maltepe district is 523.137 people and includes 80.573 of children (0-14 ages), which is 15,40% of total population (Url-12; IMM, 2024). The graph in Figure 3.2 shows the population

distribution of the district by the age group, and it is clearly seen that the highest population is in the 65+ age group which is %10,68. In its 2019-2024 strategic plan, Maltepe Municipality states that the district is the 9th most populous city in Istanbul according to 2018 data. When TÜİK data is analyzed, Maltepe district became the 8th most populous district in 2023 with an increase of 26.103 in population (Istanbul Play, 2024).

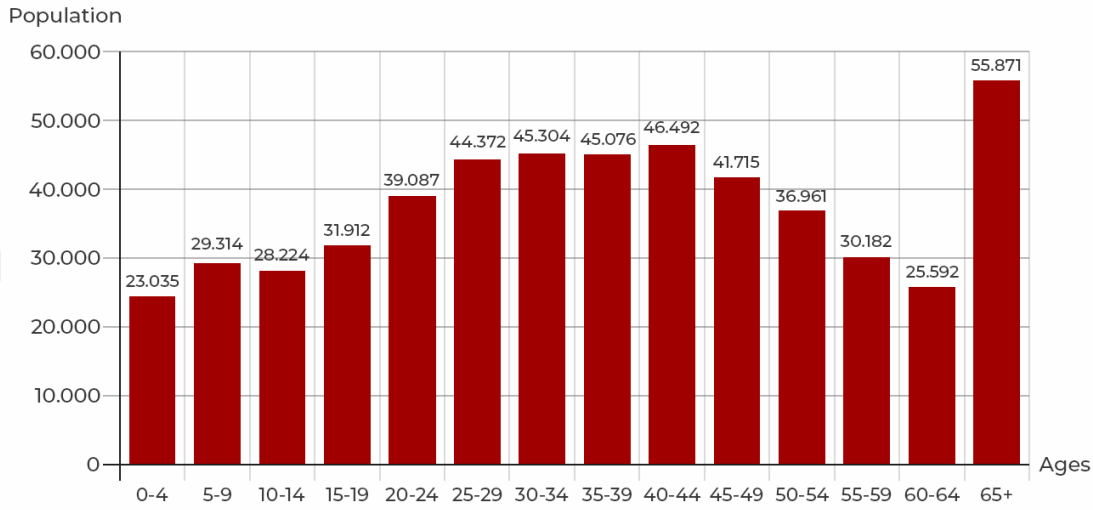

Figure 3.2 : Population distribution of Maltepe district (Url-12).

The education status distribution of Maltepe citizens, shown in the Figure 3.3, shows that most of people are graduated from university or high school. Most of the population inside those who graduated primary or secondary schools may include the younge people who are still students.

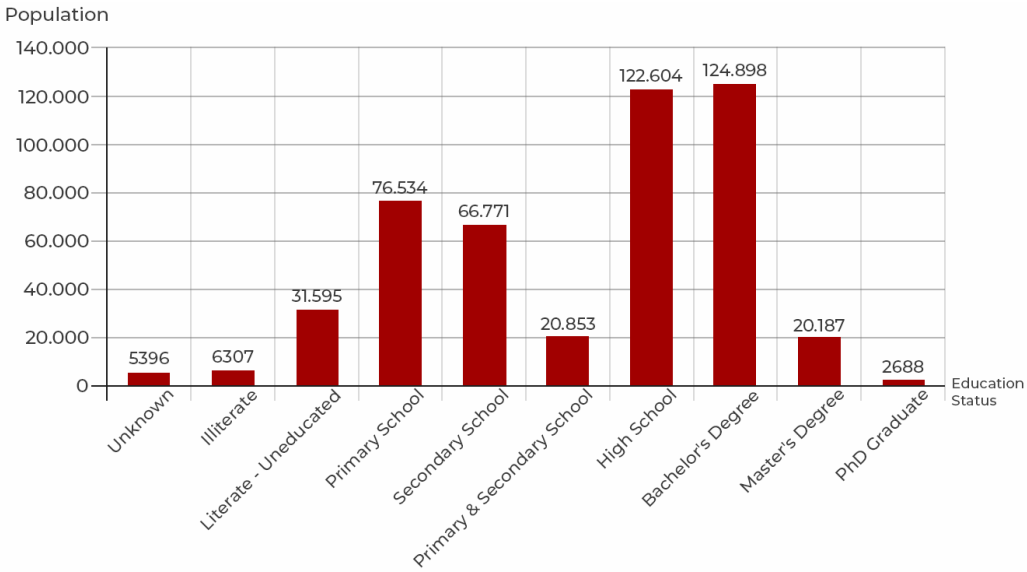

Figure 3.3 : Education status distribution of Maltepe district (Url-12).

When the age distribution and education status in Maltepe district are examined spatially, it is revealed that the E-5 highway is an important threshold, as in Figure 3.4. While the neighborhoods to the north of the E-5 highway are mostly home to an elderly population and a bachelor's degree graduate population, the neighborhoods to the south are more mixed in education levels and younger in age groups.

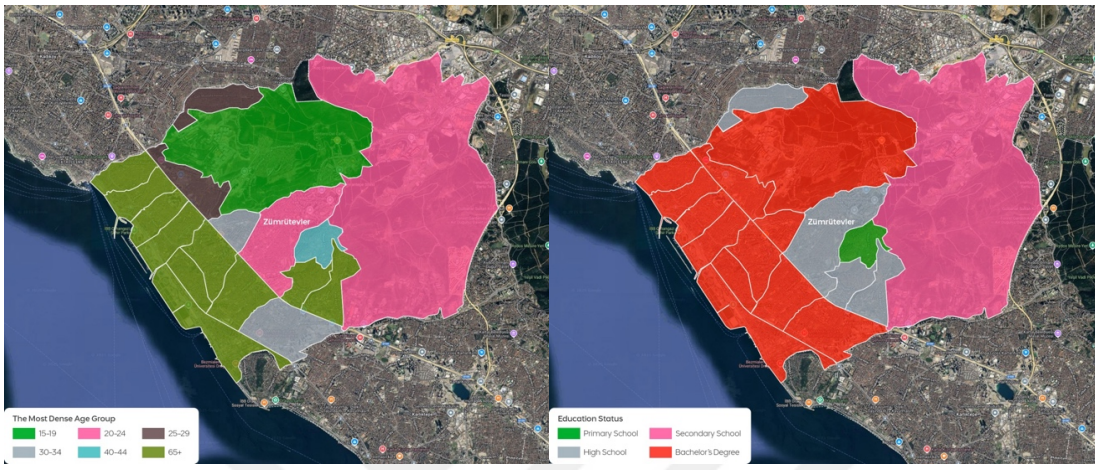

Figure 3.4 : Spatial distribution of age groups and educational status (Url-12).

When looking at the general population distribution, the separation of the E-5 highway is evident, as in Figure 3.5. Here, the Zümrütevler and Fındıklı neighborhoods in particular draws attention with its higher population compared to other neighborhoods.

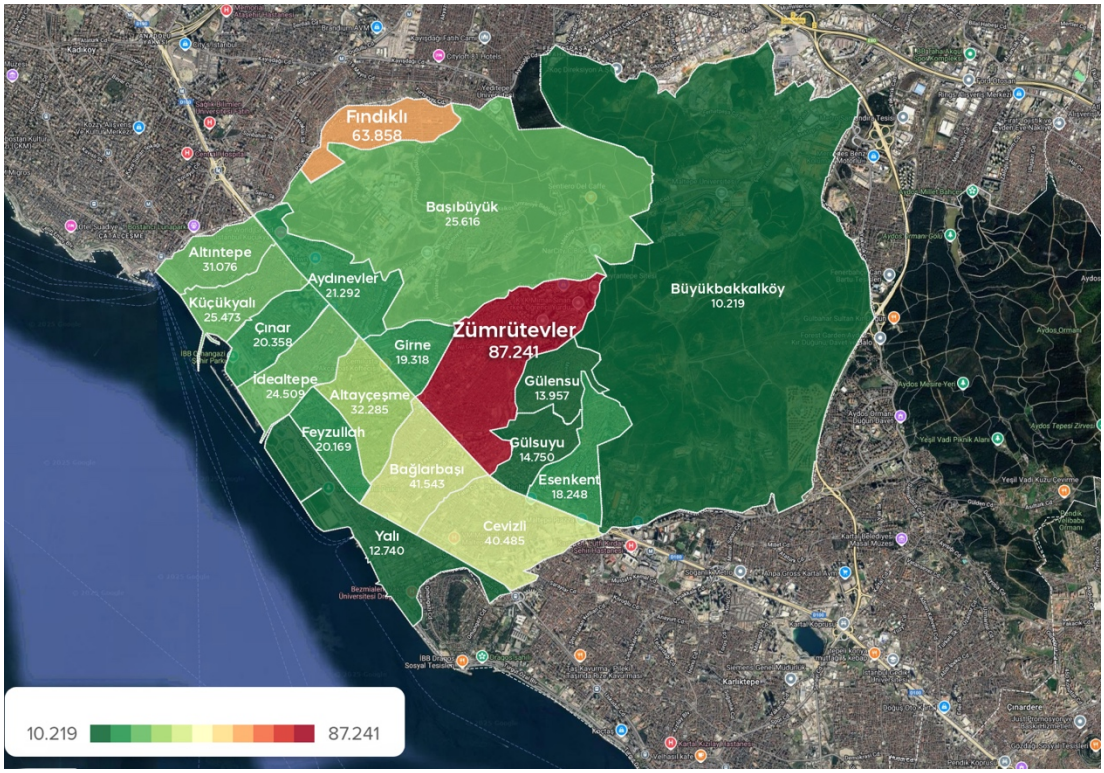

Figure 3.5 : Spatial distribution of population (Url-12).

The ratio status (SES) is an indicator commonly used in economics and sociology. Places get SES scores according to their occupational prestige, resource-based measures, absolute poverty and relative poverty (Url-15). However, Yıldız and Evren claims that there is not a certain way to define or calculate those SES scores (2010). The scale goes from A+ to D, and A+ is the highest scale. According to 2023 data of Maltepe District, the SES scores are as shown in the Figure 3.6. Almost half of the population (43%) are in the group of A+ and A groups.

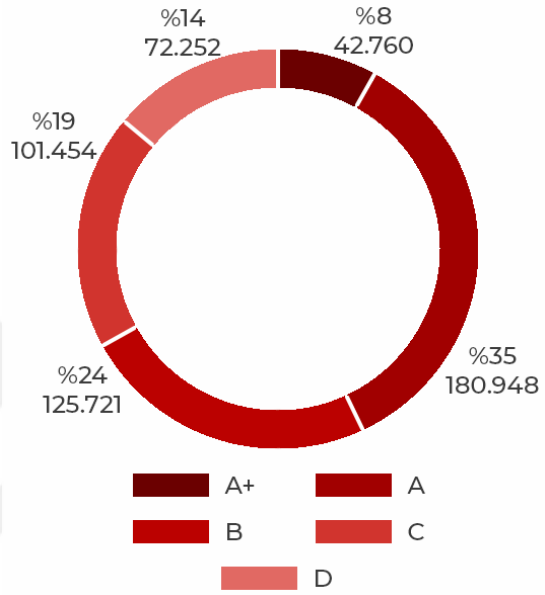

Figure 3.6 : SES score distribution of Maltepe district (Url-12).

As the local government of Maltepe district, Maltepe Municipality's child-friendly city policies and other activities to support this concept were accessed from the municipality's websites in order to get the perspective. Maltepe Municipality has both policy and field implementation activities on participation, human rights and children's rights. The municipality has explicitly identified the expansion of child-friendly city practices as a strategic goal in its 2020–2024 strategic plans (Maltepe Municipality, 2022). They also published the Civic Participation Strengthening Action Plan (Sivil Katılım Güçlendirme Eylem Planı) in 2023. The plan (2023) explains that the municipality has provided several participatory projects in terms of rights of child, accessibility, justice, and women rights with considering the proportion of participants with gender equality. There are other efforts too such as publishing the Local Equality Action Plan (Yerel Eşitlik Eylem Planı), to improve the district in general in terms of equality for all. It can be said that the municipality put their efforts on strategy making for participation.

There are also some projects that Maltepe Municipality has directly implemented by including participation. Maltepe Municipality has organised a participatory planning project with children in June 2024. The project was named Children's Maltepe Dream (Çocukların Maltepe Hayali) which is basically aimed to encourage children to contribute to the preparation of strategic plans.

Other children-related, participatory and two-phased design related projects of Maltepe are the street transformations happened in several regions such as Zümrütevler, Yalı, Altayçeşme and Cevizli neighborhoods. Only the street transformations in Zümrütevler and Yalı neighbourhoods was turned into permanent version. The locations of the two projects implemented in Maltepe district together with their neighborhood boundaries are shown in Figure 3.7. The E-5 highway, which is an important threshold, also separates the Maltepe district into socio-economic and structural differences. The two different street transformations mentioned are located on both sides of the E-5 Highway.

Figure 3.7 : Locations of the mentioned neighborhoods and project areas in Maltepe District (Google Earth, 2024).

The projects made in Zümrütevler and Yalı neighborhoods were in collaboration with an interdisciplinary architecture practice based studio, Superpool which is the contractor company. The company is founded by the two partners Selva Gürdoğan and

Gregers Tang Thomsen, in 2006 (Url-11). After the two interim projects, they have published the general information about the projects (Superpool, 2020; Superpool, 2022). Also, they have published a book named "Zümrütevler Square Transformation Rehearsal" that includes the detailed results about the interim implementation (Gürdoğan et al., 2020).

The project in the Zümrütevler neighborhood is the first two-phased child-friendly street transformation project in Istanbul, with a rehearsal in 2019 and permanent implementation in 2020. Gürdoğan et al. mentions that the reason Zümrütevler was chosen is that the neighborhood is one of the two most densely populated and disadvantaged neighborhoods of Maltepe district, moreover, more than 30% of the population is aged 0-18, and 8% are children and babies aged 0-4 (2022). Along with this population density, they also touch on the lack of open space in the neighborhood due to the current dense construction (Gürdoğan et al., 2022). Drone images of the old state of the street transformation application carried out in the Zümrütevler neighborhood, its state in the rehearsal phase, and its state after it was implemented permanently are shown in Figure 3.8. The area dominated by vehicles has been significantly transformed and has become an area that will support pedestrian safety.

Figure 3.8 : Child-friendly street transformation process in Zümrütevler: pre-project, rehearsal phase, post-permanent implementation (Superpool, 2022).

The implementation in Yalı neighbourhood is an exemplary project in its effort to strengthen the connection between the public transportation line and residential areas through child-friendly street transformation. Being next to the Marmaray station, one of the most important rail lines of Istanbul, it is a place that welcomes not only the people of Yalı neighborhood but also the users of different regions. The rehearsal and permanent implementation of the project in Yalı neighborhood was completed in 2022. The interim implementation of the project in Yalı neighbourhood was carried out between September 2021 and April 2022. After positive feedback, the permanent implementation was started in 2022. Drone images of the old state of the street

transformation application carried out in Yalı neighborhood, its state in the rehearsal phase, and its state after it was implemented permanently are shown in Figure 3.9. While an area dominated by vehicles, such as the application in Zümrütevler, is transformed into a pedestrian-safe square, it has also become an area that will provide safe access to public transportation, with a square opening to the station entrance.

Figure 3.9 : Child-friendly street transformation process in Yalı: pre-project, rehearsal stage, post-permanent implementation (Superpool, 2022).

The application in the Zümrütevler neighborhood, which was rehearsed in 2019, is included in the literature as the first two-phased child-friendly street transformation in Istanbul. It also makes sense that the application was first implemented in this neighborhood, as it is the neighborhood with the fourth highest child population density in Istanbul (Green Istanbul, 2022). Unlike the project in Yalı neighborhood, due to its location characteristics, the application in Zümrütevler exists as an area used mostly by the residents of its own neighborhood. In this sense, guided by the thesis research questions, the two-phased child-friendly street transformation application in Zümrütevler neighborhood was selected as a case study. The fact that the user profile mostly includes residents of the neighborhood where the project took place, that it is the first tactical urbanism example in Turkey, and that it is in the neighborhood with the fourth highest child population density in Istanbul are the reasons why this area was selected as a case study for this thesis.

3.2.2 Zümrütevler as a neighborhood

Within the scope of the thesis study, the child-friendly street transformation application in Zümrütevler neighborhood was examined. Zümrütevler neighborhood in Maltepe district is located north of the E-5 line, which is an important threshold for Istanbul. With a population of around 87.241, it is the most populated in Maltepe and Istanbul's fourth most densely populated neighborhood (TÜİK, 2023; IMM, 2024). Based on the 2023 data of Zümrütevler District, the population distribution by age groups is as shown in the Figure 3.10. According to the Istanbul Play Master Plan data

prepared by the Istanbul Metropolitan Municipality, the Zümrütler neighborhood hosts a significant share of the child population. In this neighborhood, where the child (0-14 years old) population is 16.147, the ratio of the child population to the total population is stated as 18.51% in the plan (IMM, 2024). Among this group, infants and toddlers (0-4 ages) make up 5.33% with a population of 4653.

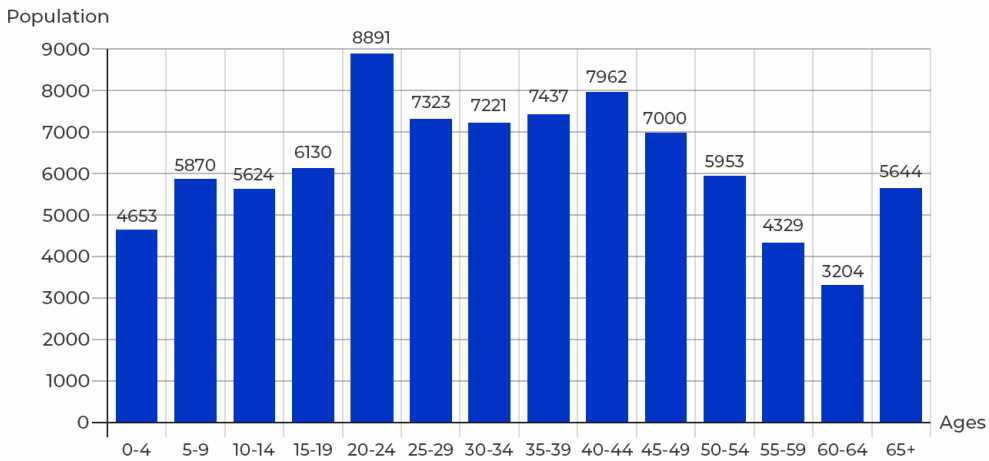

Figure 3.10 : Population distribution of Zümrütevler neighborhood (Url-12).

The database created by ITDP allows the walkability of any region to be examined in light of the data. For this section, the maps related to the population density, building density and car-free spaces in the Zümrütevler neighborhood borders were obtained from the ITDP dataset. As it is shown in Figure 3.11, The population density in Zümrütevler neighborhood and surroundings is relatively high. It is seen that the areas with low population density are areas without settlement.

Figure 3.11 : Population density, received from ITDP website on walkability (Url-14).

The building density map in the ITDP dataset, shown in the Figure 3.12, was also reviewed to evaluate the building density around the study area and its distant surroundings. When the building density near the project area is examined, it is observed that the surroundings have higher building density. When the residential areas south of E-5 are examined, it is revealed that the building density is mixed, but this may be related to the surface area of the building island.

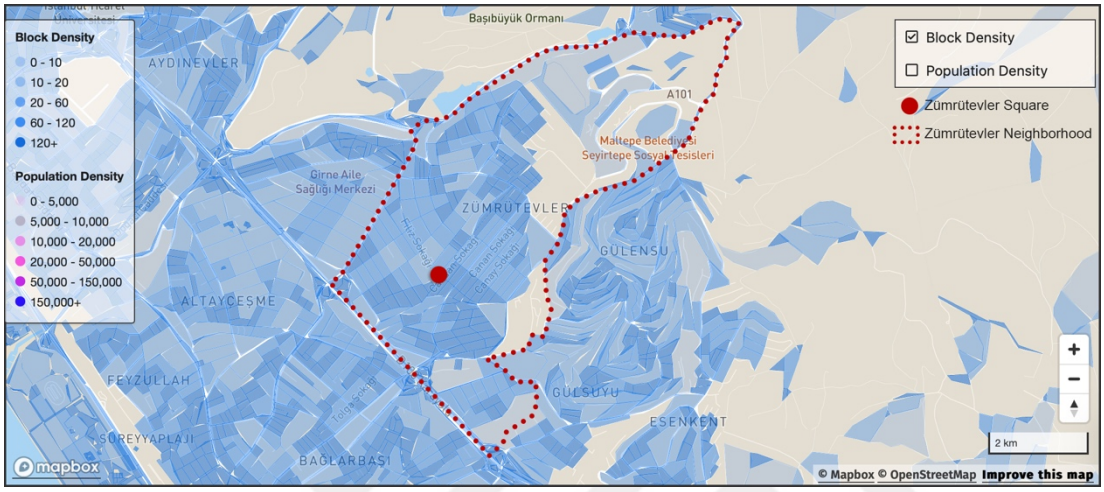

Figure 3.12 : Block density, received from ITDP website on walkability (Url-14).

When the locations of the car-free places data in the ITDP dataset (in the Figure 3.13) are observed, it is noticeable that these areas are green areas. Passive green areas such as median strips are also included in these green areas. For this reason, it would not be correct to evaluate them as car-free zones in terms of usage.

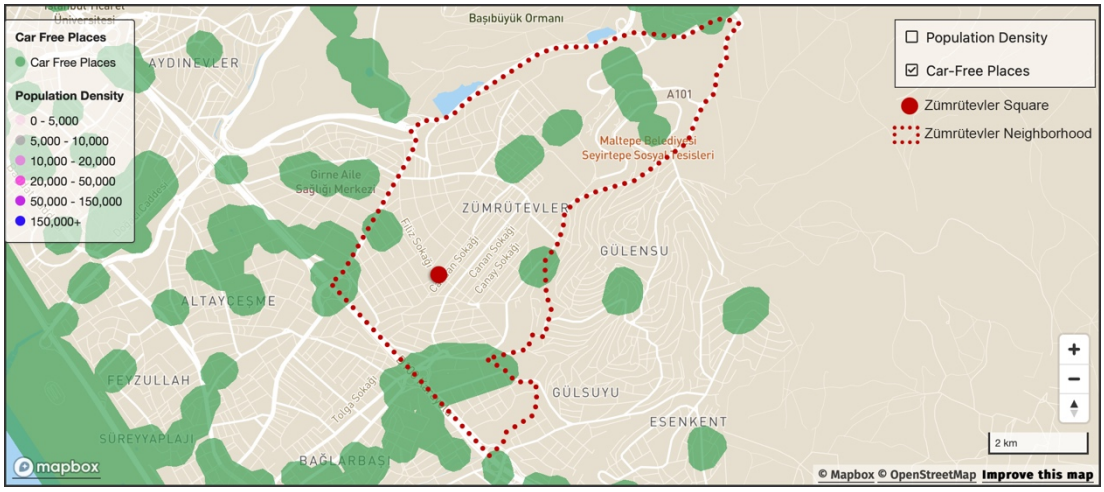

Figure 3.13 : Car-free zones, received from ITDP website on walkability (Url-14).

In order to observe the changes in the study area's immediate surroundings in different years, the road diagrams and the presence of structures on the maps of 1970, 1987,

2006 and 2024 were examined. The maps on Figure 3.14 show that the texture of the Zümrütevler Neighbourhood has not changed from 1970 to the present day, since the roads are the same from then. However, it is clearly seen that construction has increased rapidly and buildings have increased on the roadsides of vacant lots.

Figure 3.14 : Construction and texture change of the Zümrütevler Square surrounding over the years (IMM City Maps, 2024).

3.2.3 Zümrütevler Square child-friendly street transformation

The project named Pedestrian Safety Transformation Trial (Yaya Güvenliği Dönüşüm Provası) was carried out by Maltepe Municipality in collaboration with IMM and Superpool, under the consultancy of NACTO-GDCI, as part of the Urban95 program carried out by BvLF (Superpool, 2020). This program challenges city planners, designers, and community leaders to rethink urban environments from the perspective of a 3-year-old child at a height of 95 centimeters (BvLF, 2021).

Superpool published a report about Zümrütevler child-friendly street transformation with the name of "Zümrütevler Square (2020)", because the street and the chaotic junction were turned into a square, a public space for pedestrians. The report explains the project with the reasons for the place selection and numerical data on the effects of the application on usage. According to the report, the decision was made to launch the first pedestrian-focused street interventions in this district, with Zümrütevler chosen as the pilot area due to the limited availability of parks and open spaces (Superpool, 2020). The project focuses on redesigning pedestrian crossings and intersection points

along the daily walking routes used by children on their way to school, with an emphasis on child-friendly and pedestrian-centric design.

The project consists of two phases. The first stage, the interim implementation, includes the application in an area open to revision with asphalt painting and flexible street furniture to make a well-established decision on whether the design works before the permanent and costly application like paving stones. Figure 3.15 shows the area before the project while it was an intersection with only asphalt and parked cars. The previous version of the area had no direction, has become a square of the neighborhood with the rehearsal application of the child-friendly street transformation.

Figure 3.15 : The drone view of the area before the implementation (Superpool, 2019)

Maltepe Municipality, which started the interim implementation on October 18, 2019, stated that the rehearsal process would last two months. Figure 3.16 shows the ground pattern with vivid colors used during the interim implementation. The colored ground and flexible furnitures are defining the boundaries of vehicle places and pedestrianized places. The transition to permanent application was completed in August 2020, which means the interim implementation with painted grounds stayed in the area for 6 months.

Figure 3.16 : The drone view of the area during the interim implementation (Superpool, 2019)

There are differences between the design of the space and the use of pedestrian crossings during the rehearsal and the permanent design. Figure 3.17 juxtaposes the drone image taken during the rehearsal with the drone image taken after the permanent implementation, showing the differences between the pedestrian crossings. In the rehearsal application, there was a pedestrian crossing at the entrance of each intersection, while in the permanent application, the number of pedestrian crossings decreased considerably and differences were detected in their locations. Crosswalks that coincide with their locations in the rehearsal are marked in yellow. The red marks on the image of the permanent implementation represent the pedestrian crossings that were designed in the rehearsal implementation but not implemented. While there were 8 pedestrian crossings in total in the rehearsal application, this number decreased to 4 in the permanent application. In the drone images obtained for the thesis research, 7 in the rehearsal application and 3 in the permanent application appear in the visual frame.

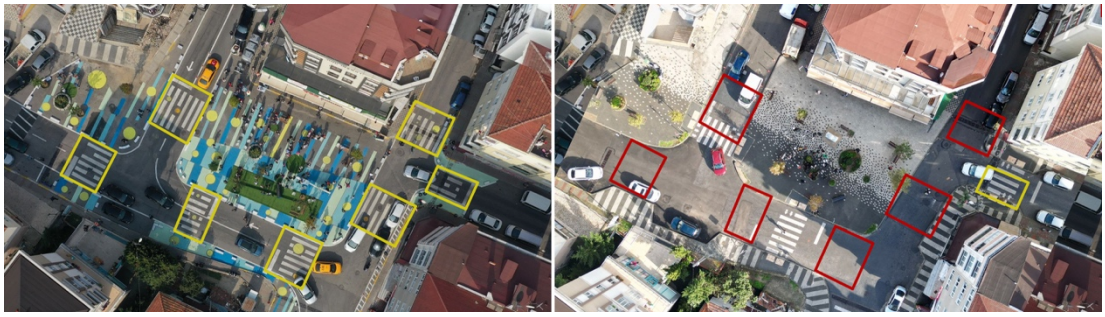

Figure 3.17 : Comparison of pedestrian crossings after rehearsal and permanent implementation (Superpool, 2020)

Superpool explains the numerical data that shows the public effect after the street transformation in their report. The report states that as a result of transforming the decisions made during the rehearsal process into logical design decisions, 1075 m² of vehicle path was converted into pedestrian path and 550 m² of this was opened to public use (Superpool, 2020). Figure 3.18 is showing the final version which is the post-permanent implementation of the area with its drone view. It is seen that comparing the pre-project version, there are some green areas added and it is now a totally public space and a square, not a road junction or a space for parked car. According to the report of Superpool (2020), there have been visible effects on the use of the square. The observations mentioned in Superpool's report says that there has been a 72% increase in the number of people spending time in the square. Superpool also informs that the number of babies and young children increased by 3.5 times, while the number of children aged 5-12 doubled (2020). It states that the elderly population has also increased 10 times in addition to young people and children.

Figure 3.18 : The drone view of the area after permanent street transformation (Superpool, 2020)

When pedestrian traffic is examined, Superpool states that pedestrian crossings from the transformed area have increased by 21% and sidewalk use has increased by 30% (2020). In particular, they emphasize that there has been a 43% increase in children's independent mobility and that 89% of this use has occurred in safe areas (Superpool, 2020).

In line with the evaluation parameters defined in the methodology, certain design details were assessed and measured using drone imagery. This analysis was conducted to provide a comparative foresight into how the rehearsal phase could have contributed to the broader evaluation process. As the rehearsal phase was completed in 2020, it was not possible to carry out in-situ measurements, counts, or observations. Therefore, the analysis relied solely on aerial imagery, and only those assessments that were feasible through parameter-guided observation could be conducted.

During the rehearsal phase, pedestrian crossings were implemented at seven different points around the square. The dimensions of all pedestrian crossings are presented in Figure 3.19. The narrowest crossing was measured at 3 meters and the widest at 6 meters. Even the shortest crossing distance met the standard defined by the evaluation parameters. The relatively close proximity of these crossings around the square contributed to the slowing down of vehicles, thereby creating a safer environment for pedestrians and children. In addition, the use of colorful, non-standard circular markings on the crossings was observed to have a traffic-calming effect. This visual strategy further supports the pedestrian-friendly nature of the area.

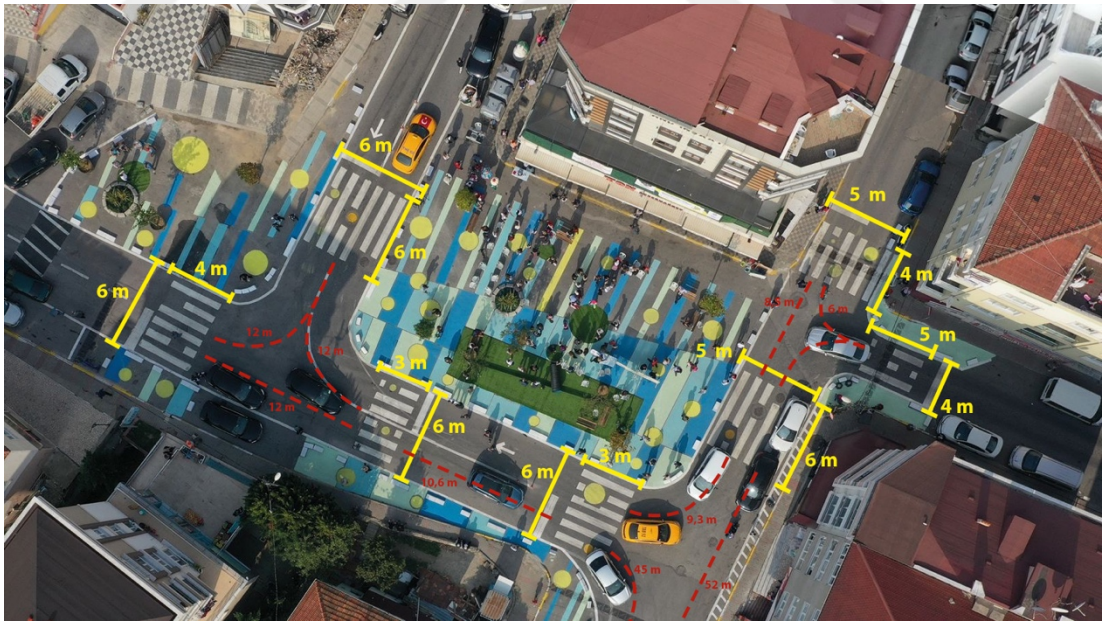

Figure 3.19 : Evaluation of pedestrian crossings in the rehearsal phase (Superpool, 2019)

Since this was a temporary implementation during the rehearsal stage, more permanent elements such as raised crosswalks were not detected. Regarding vehicle parking, as illustrated in Figure 3.20, the red-marked parking bay is located within an intersection, which contradicts pedestrian safety principles. Moreover, the placement of other on-

street parking bays was found to be too close to pedestrian crossings, which also did not comply with the evaluation parameters.

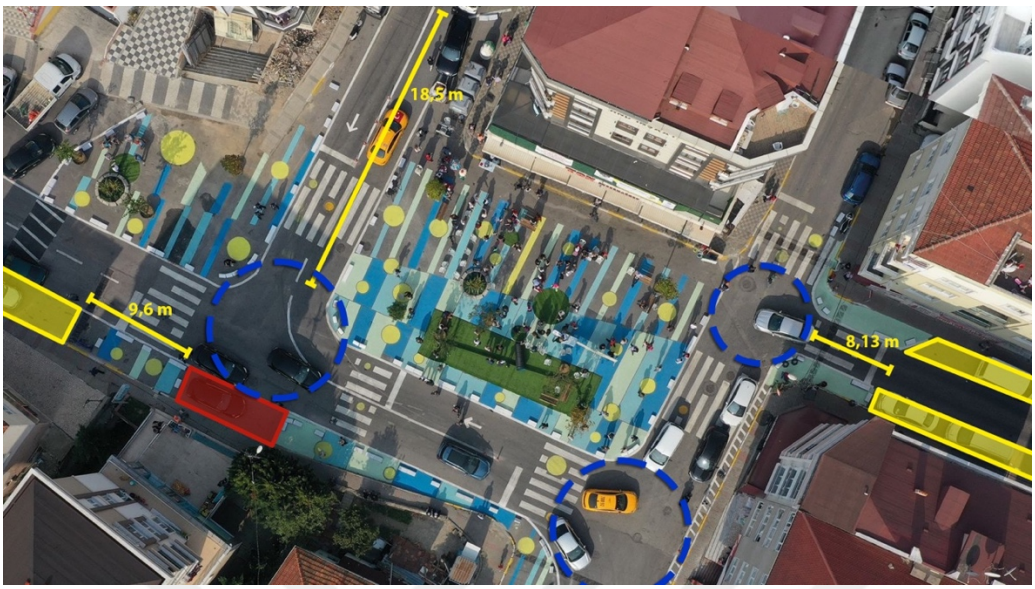

Figure 3.20 : Evaluation of car parkings in the rehearsal phase (Superpool, 2019)

Due to the nature of the asphalt-based surface treatment during the rehearsal phase, precise evaluations of sidewalk widths or ramp measurements were not feasible, as such data would not yield reliable results. Nevertheless, the entire pedestrian path network was distinctly marked with colorful surface treatments. Additionally, in terms of urban furniture, initial assessments focused on seating elements. As seen in Figure 3.21, the benches were positioned in a circular configuration within the square, oriented toward one another to promote social interaction.

Figure 3.21 : Location of seatings in the rehearsal phase (Superpool, 2020)

Figure 3.22 presents an analysis of the spatial relationship between seating and tree placements, revealing that the trees were intentionally located to provide shading for the seating areas. The positioning of the urban furniture was also observed to avoid interference with pedestrian flow.

Figure 3.22 : Evaluation of seating and tree relations in the rehearsal phase (Superpool, 2019)

When it comes to one of the most critical elements of child-friendly street transformation—play opportunities—the rehearsal phase offered only a single play element, as marked in red in Figure 3.23. However, according to the contractor's report, this space was periodically activated with various events to support free and creative play, including reading sessions and mobile play elements. In this context, the visibility of play was enhanced through programmatic activities rather than permanent physical structures.

Figure 3.23 : Evaluation of seatings, trees and play areas relations in the rehearsal phase (Superpool, 2019)

A variety of plant species of different sizes were also utilized across different zones during the rehearsal phase. Figure 3.24 illustrates the spatial distribution of vegetation: solid blue circles represent trees; semi-transparent, thick blue-lined circles denote shrubbery; and thin, semi-transparent blue outlines indicate areas covered with artificial turf. The inclusion of artificial turf was considered beneficial for creating comfortable zones where children could freely sit or play on the ground, even in the temporary setup (Figure 3.25).

Figure 3.24 : Location of different plant species in the rehearsal phase (Superpool, 2019)

Figure 3.25 : People using the artificial turf to sit and rest (Superpool, 2020)

Another notable feature observed during the rehearsal phase was the frequency and placement of bollards. As analyzed in Figure 3.26, the bollards were positioned in such a way that they effectively prevented unauthorized vehicular access while not obstructing pedestrian movement. Although precise measurements were unavailable, their visual characteristics, as seen in Figure 3.27, suggest that their scale and placement were consistent with child-friendly spatial design principles.

Figure 3.26 : Location of bollards in the rehearsal phase (Superpool, 2019)

Figure 3.27 : Photo showing the detail of the rehearsal phase (Superpool, 2020)

The rehearsal phase, although assessed retrospectively and primarily through aerial imagery, offered critical insights into the temporary application of child-friendly design interventions. Key features such as safe pedestrian crossings, strategically placed street furniture, and traffic-calming surface treatments illustrated the potential of tactical urbanism in activating public space. However, the absence of permanent play infrastructure and proximity of parking to pedestrian crossings signal important areas for improvement in future implementations. Despite its limitations, the rehearsal phase played a vital role in shaping the spatial character of the area and highlights the necessity of embedding such experimental stages within broader urban transformation processes.

4. EVALUATION OF CHILD-FRIENDLY TRANSFORMATION IN ZÜMRÜTEVLER NEIGHBORHOOD

This thesis, which aims to evaluate child-friendly street transformations from the decision-making process to the post-implementation design details across scales, posed two different research questions to cover both phases and usage characteristics. Guided by the research questions, original research methods were identified to guide the evaluation of the case study. Zümrütevler Square, the first two-phased transformation example in Istanbul, was selected as the case study for the thesis research, which questions the sustainability of the environment that emerged after the permanent implementation of child-friendly street transformations carried out in two phases. Within the scope of the thesis research, process evaluation criteria, neighborhood scale evaluation criteria and design detail evaluation criteria were created as research methods. In order for the criteria to be detailed and to be grouped and evaluated, headings have been determined under the scale criteria and the case study results will be evaluated under these headings. One of the research questions examines the correspondence of the evaluation results according to the design criteria with user movements and behaviors. For this reason, the results of the evaluation of the design details will be analyzed and interpreted together with the results of the criteria.

This section will present the results of the measurement methods of the Zümrütevler child-friendly street transformation at three different scales, guided by the criteria. The case study evaluation according to the process evaluation criteria will be carried out under the heading "Street Transformation Process" and will include both the documents collected and the results of the interviews with Maltepe Municipality and Superpool, which carried out the street transformation. Together with these results, an evaluation will be made according to the process evaluation criteria.

The evaluation criteria prepared for the neighborhood scale are grouped under three different headings and will be used to evaluate the neighborhood as a whole and immediate surroundings of the project. Land use and accessibility analyses will

measure the access distances of certain facilities, traffic analysis will examine vehicle speed restriction decisions and pedestrian priority areas, and activity analysis will measure the vitality of streets. Under each heading, it will be evaluated whether the results of the analysis meet the evaluation criteria.

The analysis findings of the design details were produced in line with the design criteria determined as the research method. Under 6 different headings, the design details were analyzed and their relationship with user behavior was considered. Whether the findings of the design details meet the criteria or not is evaluated and discussed together with the usage characteristics. Finally, all the evaluations made under each heading will be interpreted together.

4.1 Evaluation of Street Transformation Process

This section will include an evaluation of the street transformation process according to the criteria. The decision-making mechanisms and the methods and perspectives adopted during the transformation are questioned. Information was obtained from the reports of official institutions and semi-structured interviews with Maltepe Municipality as the local government and Superpool as the contractor company. With the information on the transformation process obtained through multiple methods, the child-friendly street transformation project carried out in two phases in Zümrütevler Neighborhood is evaluated.

In addition to data obtained from open sources, interviews were conducted with the institutions responsible for the project in order to gain a deeper understanding of the transformation process and other relevant details of Zümrütevler Square, which was selected as the case study. The information obtained from these interviews was used to identify and evaluate key parameters guiding the assessment of the transformation process within the scope of the project.

4.1.1 Review of planning documents and project reports

In light of the data collected for the transformation process evaluation regarding the parameters, Maltepe Municipality identified the expansion of child-friendly city practices as a strategic goal in its 2020–2024 strategic plans. The 2023 Civic Participation Strengthening Action Plan includes participatory projects focusing on children’s rights, accessibility, justice, and gender equality. In June 2024, a

participatory planning project called “Children’s Maltepe Dream” was organized to encourage children’s involvement in strategic planning.

Child-focused street transformation projects were implemented in Zümrütevler, Yalı, Altayçeşme, and Cevizli neighborhoods; permanent transformations were completed in Zümrütevler and Yalı. Maltepe Municipality, in collaboration with Istanbul Metropolitan Municipality (IMM) and Superpool, conducted the “Pedestrian Safety Transformation Trial” as part of the Urban95 program, under the consultancy of NACTO-GDCI.

Superpool’s 2020 report “Zümrütevler Square” explains the rationale for choosing the pilot site and presents data on the project’s impact on public use. The implementation of the two-phased design application with a tactical urbanism approach shows that the project process was carried out in line with participatory planning. In the document explaining the rehearsal application process prepared by the contractor company Superpool, it was mentioned that flexible play equipment was brought to receive feedback and ensure the participation of children and caregivers in the feedback (Gürdoğan et al., 2022). In this sense, it was revealed that the project included children and caregivers in this process with its participatory approach. Although no data regarding the funding and budget study of the project was accessed from open sources, how the project coordination was carried out was clearly stated in the document prepared by the contractor company (Gürdoğan et al., 2022).

4.1.2 Interview with the local government

The primary authority for the Zümrütevler Square transformation project from the decision-making phase to the post-implementation follow-up phase is Maltepe Municipality and the responsible unit is the Strategy Development Directorate. A semi-structured interview was conducted with the Director of Strategy Development within the scope of the thesis study. They were asked how this transformed area was decided and whether there was a higher scale decision. They were asked how they managed the principle of participatory planning in the project process and by which methods they ensured this. Information was obtained on whether this project was funded by a grant or whether it was entirely funded by the institution's budget. Questions were asked about how coordination was ensured in the area from the very beginning and what difficulties are still experienced in the area.

The interview with representatives from Maltepe Municipality, given in Appendix D, provided deeper insights into the institutional dynamics and design processes behind the Zümrütevler child-friendly street transformation. It was emphasized that the decision to implement a child-focused transformation was aligned with upper-scale policy documents such as the municipality's strategic plan and national-level declarations, but the methodological approach was significantly shaped by engagement with the Kent95 program. This collaboration introduced new concepts such as data-driven decision-making and design strategies tailored to children aged 0–3 and their caregivers. Although the municipality did not initially have a clear road map, working with Superpool and other stakeholders helped define the approach and test innovative spatial interventions. The area was selected due to its disadvantaged context and high pedestrian complaints, with no prior public square available. Regarding financing, it was noted that the project was not institutionally funded through a grant; rather, existing municipal materials and labor were used, while certain resources such as paint and carpet were provided through a grant via Superpool from the Bernard van Leer Foundation.

Participatory planning was partially integrated during and after the rehearsal phase, especially through direct interactions with caregivers and children. Tools such as in-person surveys, field observation, and informal conversations were used to gather user feedback, with Superpool acting as a bridge between the public and the municipality. Coordination began internally, with a cross-departmental team formed before implementation. The mayor and deputy mayors were directly involved in planning, while external coordination—particularly with Istanbul Metropolitan Municipality (IMM)—proved more challenging due to overlapping responsibilities. Among the ongoing difficulties, the most critical was communicating the temporary nature of the tactical urbanism project to both municipal staff and the public. The pandemic also delayed the transition to a permanent design, causing some gains in the field to be reversed. While few radical changes occurred between the rehearsal and permanent phases, the loss of colorful ground patterns was noted as a significant visual compromise. Nonetheless, the flexibility offered by the temporary phase was seen as the project's most valuable asset, allowing real-time testing of spatial and behavioral responses and informing more grounded, permanent interventions.

4.1.3 Interview with the contractor company

Superpool is the contractor institution that has been involved in the transformation project regarding Zümrütevler Square since the very beginning, taking responsibility for data collection, compilation and producing design proposals. Within the scope of the thesis study, a semi-structured interview was conducted with the person who was the project coordinator at Superpool and who was directly responsible for the project and produced the design proposal. Questions were asked about the decision-making stages of the rehearsal implementation, its implementation and what obstacles were encountered during the transition to permanent implementation. Questions were asked about at which stages and to what extent they involved children and caregivers in the project. The interview with Superpool, the design and implementation partner of the project, provided valuable insights into the project's decision-making and implementation process. Appendix E includes the questions and answers of the interview.

According to the answers of Superpool, the pilot location was chosen after site assessments were conducted in several districts in collaboration with NACTO and GDCI as part of the Urban95 program. The Zümrütevler neighborhood, with its socio-economic disadvantages and high population density, was considered a strategically appropriate site due to its proximity to the E-5 highway and its role as a key pedestrian corridor connecting three nearby schools.

Superpool emphasized the importance of collaborative decision-making, with project directions shaped through regular meetings between Maltepe Municipality, GDCI, and Superpool. The initial dry run of the project was supported by field observations and data collection conducted over three weeks, informing the geometric and functional components of the design. Children and caregivers were directly engaged in the process, particularly during data collection and implementation. Superpool recalled that children were actively present during painting sessions, and their perceptions were captured through surveys and informal interactions. Although no major revisions were made based solely on children's feedback, certain elements—such as the reuse of corrugated pipes—were retained in the permanent version due to their popularity among young users.

Several challenges were identified in the transition from temporary to permanent design. Superpool highlighted that the refusal by the Istanbul Metropolitan Municipality (IMM) to approve certain pedestrian crossings, including elevated crosswalks, compromised the original intent of the design and weakened pedestrian continuity. Speed bumps were added as a less effective alternative. Moreover, adjustments to lane widths (from 6 m to 7 m) during the permanent phase allowed continued parking, which interfered with turning radii and undermined the pedestrian-priority focus of the project. A hardware store's insistence on retaining on-street parking and initial resistance from minibus drivers were also mentioned as obstacles, though these were eventually resolved through negotiation and adaptive planning during the dry run.

Superpool also reflected on the transformative power of children's presence and participation. A moment in which a skeptical parent's perception was changed by his child's positive reaction was cited as a turning point that demonstrated how engaging children can shift public opinion. The project's function as an earthquake assembly area and its visibility through international site visits further reinforced its acceptance by local residents and authorities. Overall, Superpool stressed that the flexibility and learning-oriented nature of the rehearsal phase were essential to the success of the permanent transformation, allowing for real-time testing and adaptation in both design and stakeholder engagement.

4.1.4 Results and discussion of analyses

According to the data obtained from open sources and interviews with project coordinators that include detailed explanations of the project process, the transformation process was evaluated according to the parameters determined in the research methodology section. Based on the data that local government mentioned, the street transformation application was an action taken from a higher scale decision. The transformation project decision of this area was taken in line with the need and it became the first square of the neighborhood. When the whole process, including the rehearsal process and the current situation, is considered, the data obtained from open sources and the interviews with the institutions show that other parameters were provided for the transformation process.

Table 4.1 presents the extent to which each assessment parameter was fulfilled, based on the information obtained from collected documents and stakeholder interviews. The findings indicate that all parameters are met for the transformation process.

Table 4.1 : Results of transformation process according to evaluation parameters.

The Parameters for Evaluation	Provided (1)	Not provided (0)	Score (/7)
Prepare an action plan.	x		1
Fostering inclusive participation through partnerships and collective action	x		1
Involve children and caregivers in the process.	x		1
Adaptive planning, balancing experimental approaches	x		1
Encourage experimentation through temporary interventions and showcase potential solutions	x		1
Oversight and coordination of place	x		1
Evaluation of expenses and advantages	x		1
		Total	**7**

4.2 Evaluation of the Neighborhood Scale

It is also important to examine the neighborhood where the child-friendly street transformation took place in order to make a cross-scale evaluation. Land use throughout the neighborhood, accessibility of certain facilities, identification of existing traffic restrictions and other pedestrian-oriented zones, questioning low emission zones by providing vehicle restrictions, and questioning the vitality of neighborhood streets with activity analysis in general will be carried out in this section. At the end of each analysis, it will be discussed whether the results meet the criteria according to the evaluation criteria. This discussion and evaluation at the neighborhood scale will lead to a higher scale examination of the transformation of Zümrütevler Square, which has been identified as a case study, and information on whether the concept of child-friendly is a local or regional decision.

4.2.1 Land use and accessibility

In this section, the extent to which the Zümrütevler Neighborhood encourages walking will be discussed in conjunction with the land use analysis and the access distances to certain facilities -child-friendly facilities- derived from the land use analysis. Distances for some facilities are specified in the evaluation criteria to encourage children to walk. It will be measured with the help of land use data whether kindergartens, open spaces and health facilities are within a minimum distance of 300 meters. Primary schools

will also be analyzed by considering their minimum distance of 600 meters. At the same time, if there are any of these facilities that encourage mobility, they will be identified.

The first parameter investigates the distances of some certain facilities, which are related to children's needs such as schools, kindergartens, open spaces and health facilities. In this sense, in order to investigate the access distances, not only the facilities within the neighborhood borders but also the facilities outside the neighborhood borders that have the potential to include the areas in the Zümrütevler neighborhood within the access distances were included in the analysis. The Figure 4.1 shows the access distances that will allow children to walk along with the locations of the open spaces. Although the case study point is within the access distances, when looking at the neighborhood in general, there are also residential areas where children cannot easily reach the open space by walking.

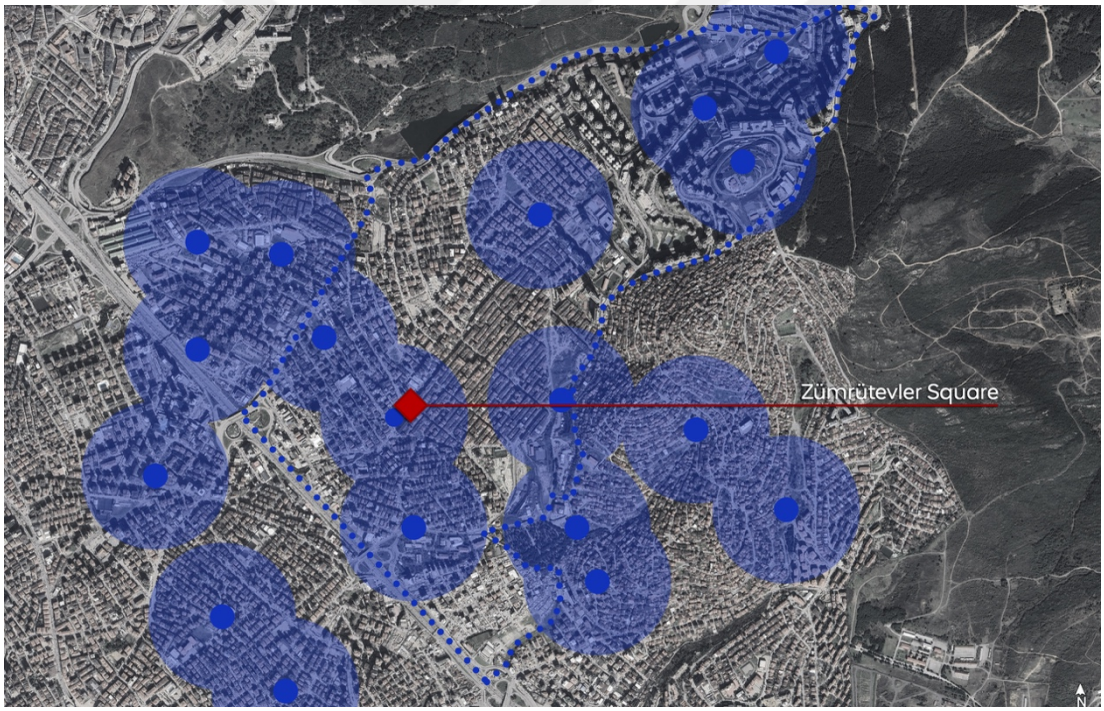

Figure 4.1 : The locations and determined distances of open spaces inside and around Zümrütevler neighborhood (Google Earth, 2024)

The Figure 4.2 shows nursery locations and the distances children can walk from these locations. Like the results of the open spaces accessibility, the case study point is within the access distances. However, looking at the neighborhood in general, there are residential areas where children cannot easily reach the nursery schools by walking.

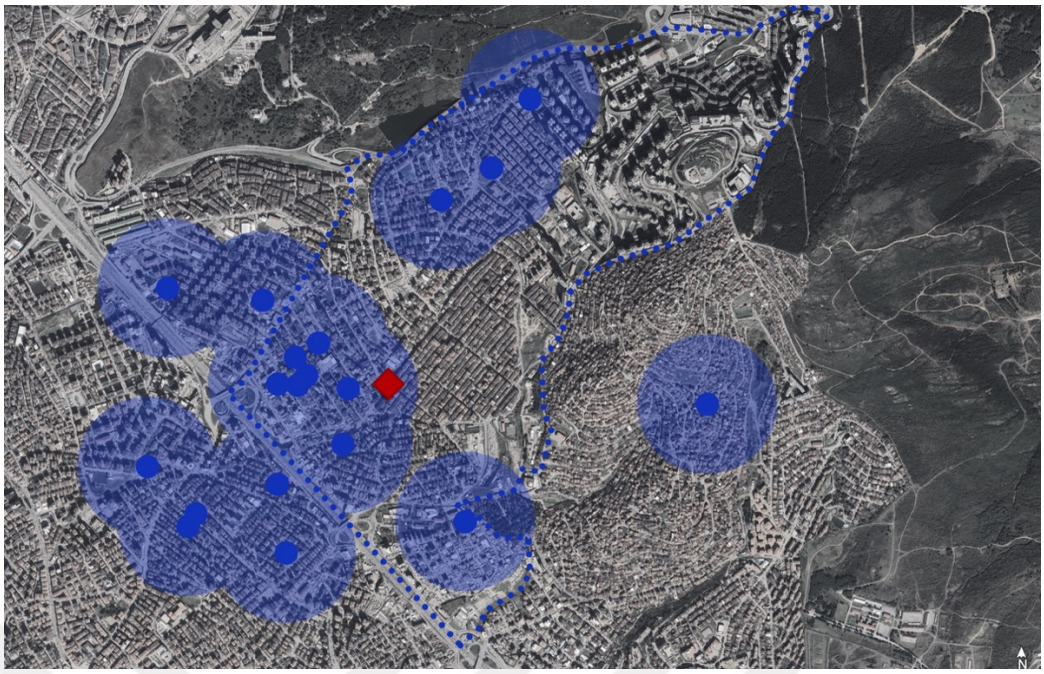

Figure 4.2 : The locations and determined distances of nursery schools inside and around Zümrütevler neighborhood (Google Earth, 2024)

The Figure 4.3 shows health facilities and their distances children can walk from these locations. Like the results of the accessibility of open spaces and nursery schools, looking at the neighborhood in general, there are residential areas where children cannot easily reach the halth facilities by walking. Unlike them, the case study area is not within the access distances.

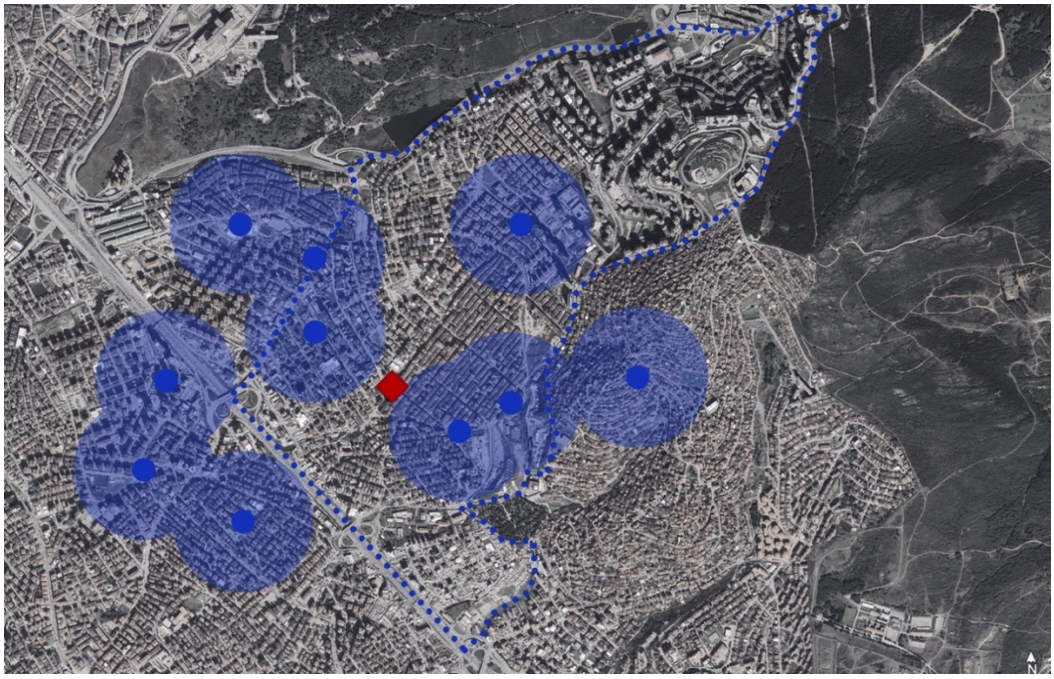

Figure 4.3 : The locations and determined distances of health facilities inside and around Zümrütevler neighborhood (Google Earth, 2024)

Figure 4.4 shows the locations of primary schools and their accessibility distance by walking for children. Unlike other facilities, the accessibility distance of the primary schools is higher than the others. Therefore, due to their distribution within the neighborhood and long accessibility distances, the accessibility circles cover almost the entire neighborhood. Although there are some residential areas outside the walking distance, they are much less compared to the situations of other facilities.

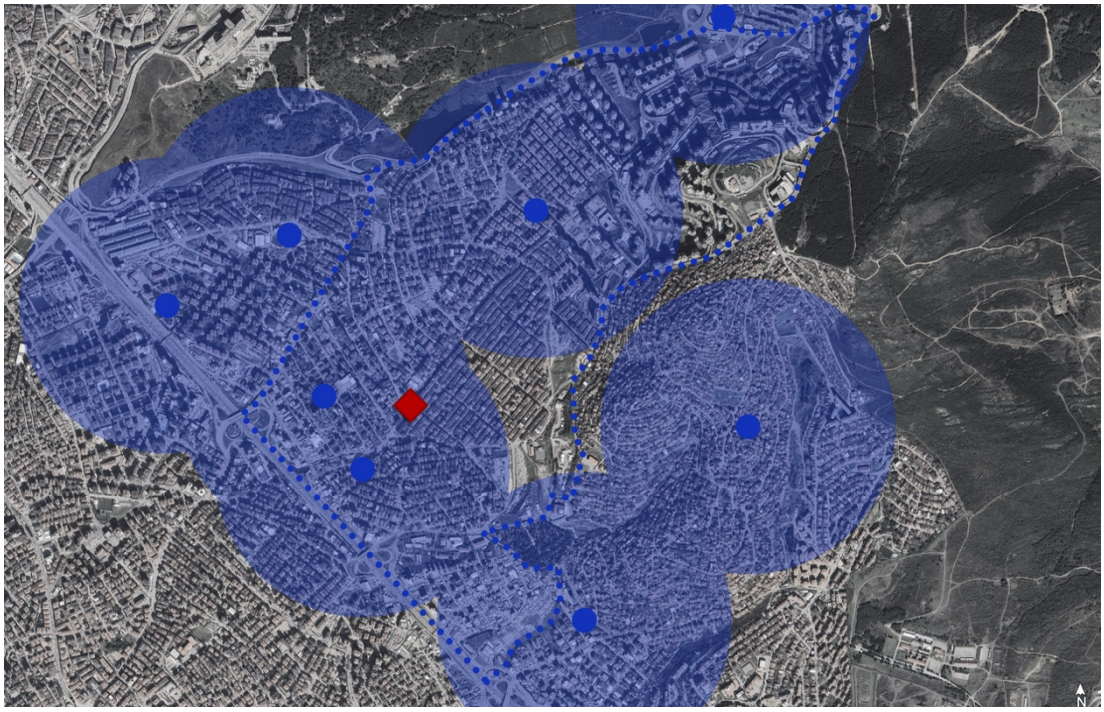

Figure 4.4 : The locations and determined distances of primary schools inside and around Zümrütevler neighborhood (Google Earth, 2024)

When the evaluation is made in line with the accessibility analysis, Zümrütevler neighborhood cannot meet the first evaluation parameter. Since it does not have a local mobility park concept or an area with a similar concept, it cannot meet the second parameter either. According to Table 4.2, Zümrütevler neighborhood receives 0 points from the accessibility evaluation because it does not meet the parameters.

Table 4.2 : Evaluation of land use and accessibility according to neighbourhood scale criteria.

The Parameters for Evaluation	Provided (1)	Not provided (0)	Score (/2)
Reduce trip journey with keeping the distances (minimum 300 m to open spaces, nursery school, health facilities, and minimum 600 m to primary school)		x	**0**
Local mobility parks		x	**0**
		Total	**0**

4.2.2 Traffic calming measures

Child-friendly spaces can be created by ensuring children's independent mobility. A neighborhood that claims to be child-friendly must allow children to be present on the streets freely. In this context, it is expected that measures have been taken to slow down vehicle traffic. Areas with speed limit enforcement and other vehicle speed reduction implementations—parameters also included in neighborhood-scale evaluations—were assessed within a 250-meter radius of the study area.

According to Figure 4.5, when examining the area within a 250-meter radius of the study area, it is observed that only the streets surrounding the square have lower speed limits. On other streets, the speed limit remains the same as the 50 km/h limit defined by the General Directorate of Highways for residential areas. These limitations are not sufficient to define the area as a child-friendly space. Additionally, when examining the area for pavement variations to increase drivers' awareness, surface treatments were identified on only two streets.

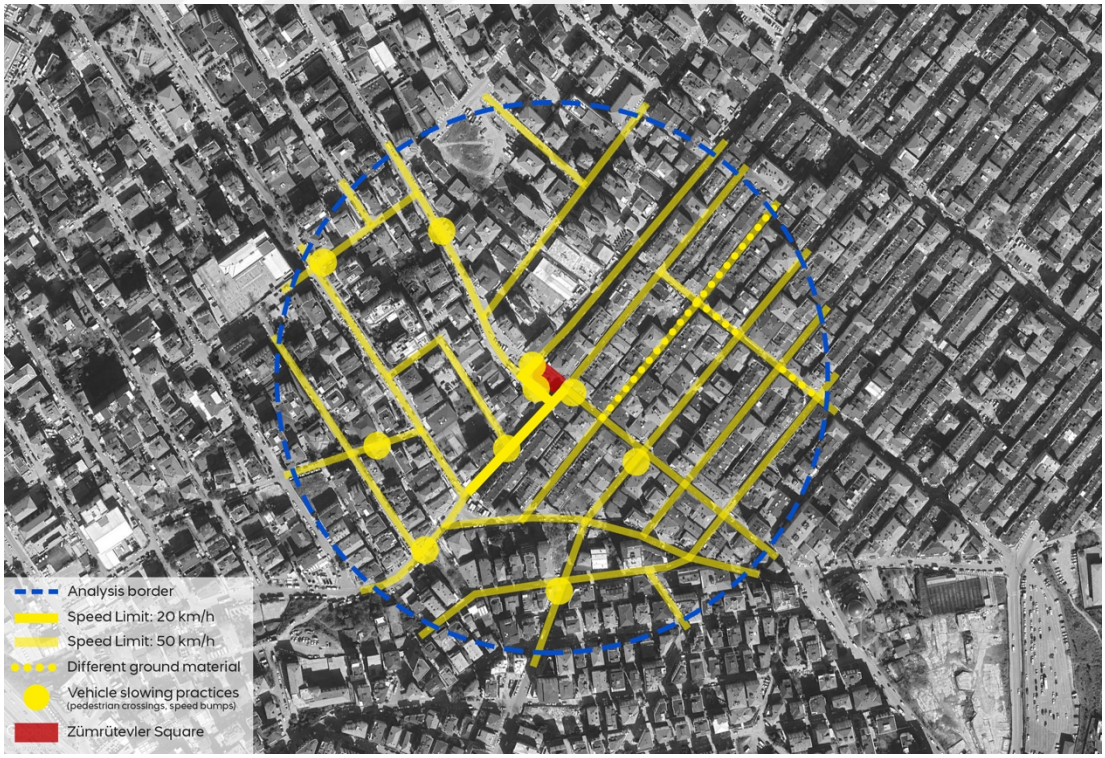

Figure 4.5 : Traffic calming measures (Google Earth, 2024)

When the area within a 250-meter radius of the study area, Zümrütevler Square, is examined (Figure 4.6), it is found that the only area specifically identified as

pedestrian-friendly is Zümrütevler Square itself. Since attention must be paid to areas with high pedestrian density based on the parameters, data from Yandex Maps regarding pedestrian density was also included in this analysis. Within the analyzed area, it was determined that apart from the Zümrütevler Square Transformation, there are no specific efforts to encourage pedestrian activity.

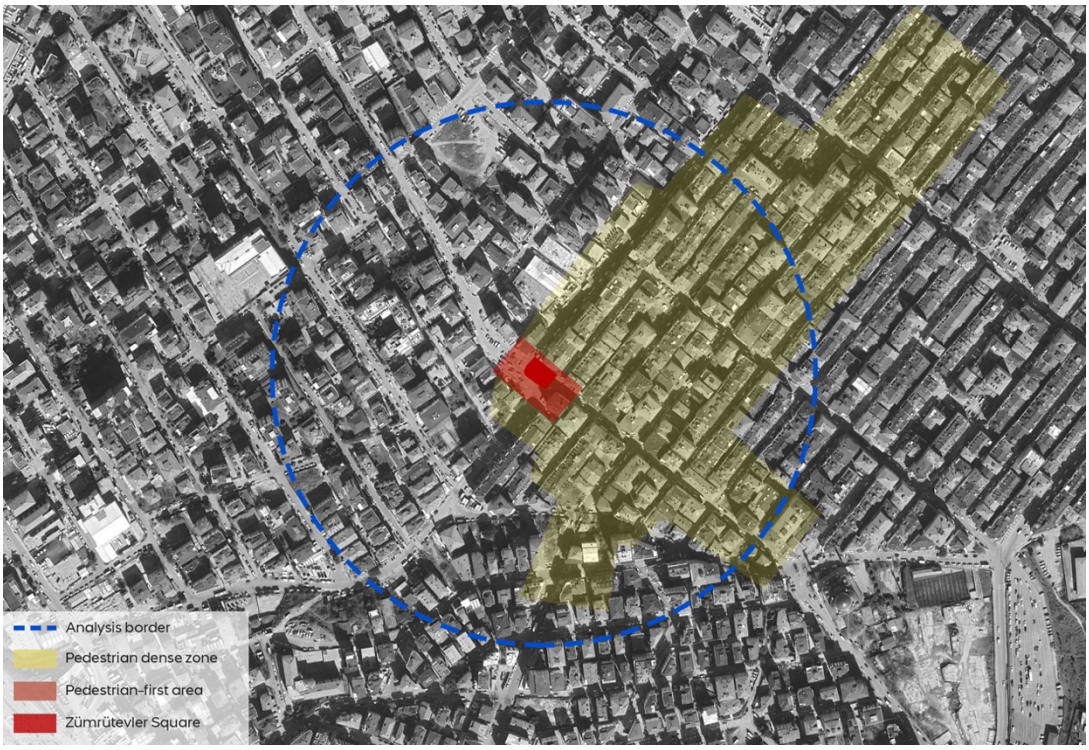

Figure 4.6 : Pedestrian-first zones (Google Earth, 2024)

When evaluated based on the parameters (Table 4.3), even though traffic calming measures have been implemented in the vicinity, they are not sufficient to create a child-friendly environment. Aside from Zümrütevler Square and its immediate surroundings, no other pedestrian-priority areas have been identified, and there are no car-free areas or streets that could be defined as low-emission zones. Therefore, when the surrounding area within the scope of the analysis is evaluated based on the parameters (Table 4.3), it is concluded that none of the parameters are met.

Table 4.3 : Evaluation of traffic according to neighbourhood scale criteria.

The Parameters for Evaluation	Provided (1)	Not provided (0)	Score (/3)
Traffic-calming measures		x	0
Pedestrian-first zones to encourage walking		x	0
Low-emission zones		x	0
		Total	**0**

4.2.3 Activity on streets

Active streets are defined by utilizing land use and the potential for people to be present outdoors. In particular, streets with mixed uses such as commercial and residential have been directly considered as active. According to the analysis result in Figure 4.7, when the 250-meter radius around the study area is considered, the majority of streets are those with active frontages and human density due to commercial activities. The pedestrian density data obtained from Yandex Maps also overlaps with this area.

Figure 4.7 : Distribution of active streets (Google Earth, 2024)

Additionally, some streets, although residential and lined with garden walls at certain distances, lead to schools, meaning children walk to school along these streets. Therefore, these streets have also been assigned as active facades. Elements such as vacant lots or high garden walls have been used to identify inactive streets. Streets that are completely dominated by vehicles and where entrances to residences or any windows that could attract human-scale attention are restricted have also been considered inactive. According to this assessment, images of some streets are provided in Figure 4.8.

Figure 4.8 : Active and inactive street frontages

When considering the activities on the streets, it is observed that the area mostly provides active frontages. Although some residential areas do not offer a child-friendly environment due to high garden walls, this situation is in the minority. Furthermore, since all buildings have windows and entrance doors facing the streets, the criterion of "Windows and main doorways" in the parameter list is also fulfilled. Based on the direction of all the data and the evaluation of the parameters, the vitality criteria (Table 4.4) in the area are met.

Table 4.4 : Evaluation of activities according to neighbourhood scale criteria.

The Parameters for Evaluation	Provided (1)	Not provided (0)	Score (/2)
Active facades	x		1
Windows and main doorways	x		1
		Total	**2**

4.2.4 Results and discussion of analyses

Although Zümrütevler Square is within walking distance of certain facilities, much of the neighborhood lacks adequate pedestrian access to key child-oriented spaces such as open areas, kindergartens, and health services. Therefore, the neighborhood fails to meet the accessibility parameters. Traffic calming is limited to the square's immediate surroundings. Elsewhere, speed limits remain standard, and surface interventions are

minimal. However, most streets feature active frontages, supported by mixed land use and pedestrian flow. Overall, the area largely meets the vitality criteria. When all evaluations are considered, it is shown in Table 4.5 that most of the parameters are not met.

Table 4.5 : Evaluation of activities according to neighbourhood scale criteria.

The Parameters for Evaluation	Provided (1)	Not provided (0)	Score (/7)
Reduce trip journey with keeping the distances (minimum 300 m to open spaces, nursery school, health facilities, and minimum 600 m to primary school)		x	0
Local mobility parks		x	0
Traffic-calming measures		x	0
Pedestrian-first zones to encourage walking		x	0
Low-emission zones		x	0
Active facades	x		1
Windows and main doorways	x		1
		Total	2

While the transformation of Zümrütevler Square introduces localized child-friendly spatial qualities, this initiative remains limited in scale and lacks integration with broader neighborhood planning strategies. It can be concluded that the child-friendly environment is implemented at a micro scale, without broader regional or systematic support.

4.3 Evaluation of Design Details

In this section, the measurement and evaluation of the details that are included in the evaluation criteria for the design of the space and which should be taken into consideration are analyzed. The measurements of the design details analyzed under six different headings were made in the field on January 13, 2025. Each design element that will determine whether the evaluation parameters are met or not was counted by hand, measured with a meter or observed. The counted, measured and observed details were noted on the map at hand. Design elements and distances that are too large to be measured with a meter in the study area were measured on the map. In addition to measurement, observation was also made on the user behaviours and pedestrian flow. Photographs of the analyzed elements were taken in the field. All the details explained under the six headings will guide to evaluate the case study in terms of design details with determined parameters.

4.3.1 Pedestrian crossings

There are 4 pedestrian crossings in the immediate vicinity of the area where the street transformation took place and which has now turned into a square. Three of them are visible in the drone image obtained for the thesis study. The widths of all 3 pedestrian crossings evaluated are 4 meters. Two of the pedestrian crossings are 7 meters long and one is 4.64 meters long. The distances between the pedestrian crossings around the venue do not exceed 37.5 meters. Figure 4.9 shows the detail of the distances between the pedestrian crossings along with their measurements. No other pedestrian crossings were observed in the immediate vicinity, meaning that the requirement of one crossing every 50-100 meters was only met within the transformed area.

Figure 4.9 : Measurements of pedestrian crossings (Superpool,2020)

The color of the pedestrian crossings around the square is white, but has lost its brightness due to vehicular use. Figure 4.10 shows the general condition of the pedestrian crossings around the square. At the same time, as seen in Figure 4.11, a bollard was detected on the square side of one pedestrian crossing. In addition, a bollard was also detected on the ramp in front of the 4.64 meter long crosswalk. Both bollards are in a position to prevent the use of the pedestrian crossing and disabled access as they are located on the ramp.

Figure 4.10 : Human scale images of pedestrian crossings

Figure 4.11 : A bollard on the disabled ramp and in front of the pedestrian crossing

During the observations of the use of the space, it was observed that the bollards in the middle of the disabled ramp, which were predicted to prevent the use of the pedestrian crossing, did not create an obstacle for a user carrying a wheeled market bag (Figure 4.12). In addition, it was observed that it did not create any hesitation for users who prefer to use that pedestrian crossing.

Figure 4.12 : A user using a crosswalk with a rolling bag in hand

Although the widths of the crosswalks and the distances between each other are in compliance with the standards, it was observed during the field observation that the existing pedestrian crossings are mostly not used, and that crossings from areas close to intersections are dense. Figure 3.5 shows the differences between the pedestrian crossings in the rehearsal and the pedestrian crossings in the permanent implementation. On January 13, 2025, it was observed that pedestrians preferred these points to cross the street as if the pedestrian crossings in the rehearsal implementation were in place. This is evident in the areas where the lines are concentrated in the pedestrian flow study in Figure 4.13. The circles represent the points where pedestrians use the crossing points for crossing the street other than crosswalks. Yellow circles indicate points that pedestrians use heavily for crossing purposes but do not have any urban elements for crosswalks. Blue circles indicate the speed bumps that pedestrians use as a crosswalk. At the same time, in the photographs of pedestrian crossing usage, more photographs were obtained where the crossing users did not use the pedestrian crossing.

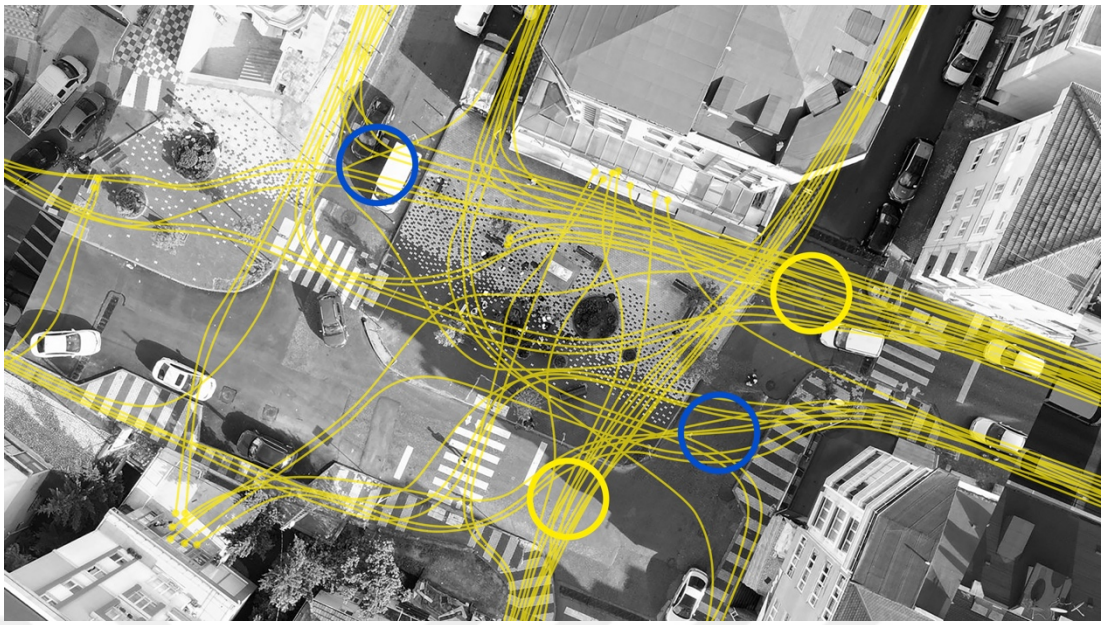

Figure 4.13 : Pedestrian flow map with frequently used crossing points other than pedestrian crossings (Superpool,2020)

Another noteworthy issue for users crossing the road is the use of the top of the speed bumps. In Figure 4.5, the blue circles indicate the locations of the speed bumps. Figure 4.14 shows the locations and measurements of the speed bumps in relation to the pedestrian crossings. The observations showed that the widths of the speed bumps were in compliance with the pedestrian crossing standard and were actively used by pedestrians, indicating that the speed bumps were practiced as pedestrian crossings. A 4.2 m wide speed bump meets the need for a pedestrian crossing at that point. The 4.7 m wide speed bump (Figure 4.15) is used as a raised crosswalk.

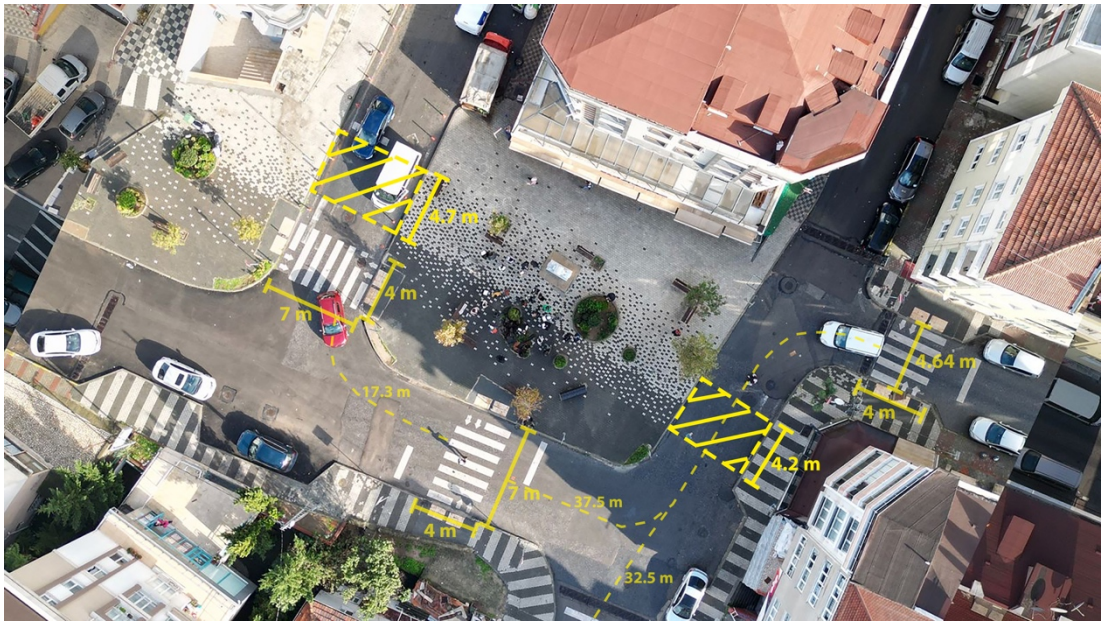

Figure 4.14 : Location of speed bumps and their measurements (Superpool,2020)

Figure 4.15 : The use of speed bumps

The distances between the parking pockets and pedestrian crossings and intersections were measured and are shown on the map in Figure 4.16. The distances of the car parking pockets from the pedestrian crossings were measured as 12.74 m and 6.46 m. The yellow marked parking pockets are right next to the pedestrian crossing and have a distance of 8.13 meters from the intersection. Red marked pocket parking lots are located inside the intersection points. The distance between the blue marked pocket parking lot and the intersection point is 5.6 meters.

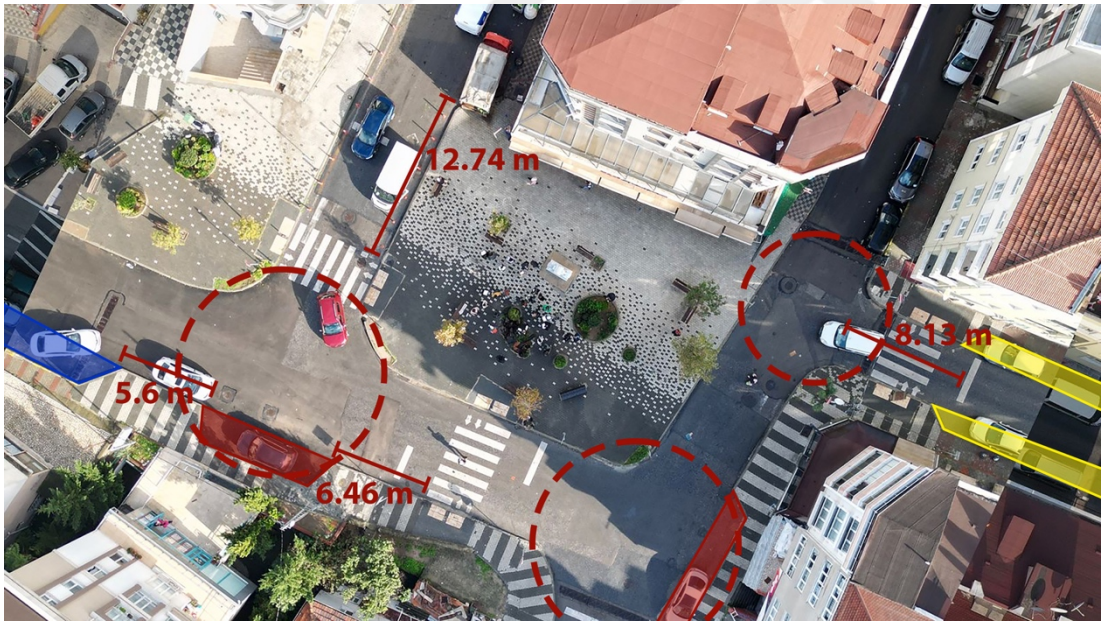

Figure 4.16 : Location of car parkings (Superpool,2020)

As a result of the analysis of the pedestrian crossings, the evaluation according to the design criteria is shown in Table 4.6. The widths of the pedestrian crossings are 4 meters and meet the standard specified by the criteria. When only the transformation area is examined, the condition of having pedestrian crossings every 50-100 meters is met. However, outside of this area, there are no pedestrian crossings in the immediate vicinity at a distance of at least 100 meters. The colors of the pedestrian crosswalks are faded due to vehicle use, so they do not meet the bright color condition. There are

no raised crosswalks in the area. The locations of the pocket parking lots do not comply with the design criteria. As a result, the analysis of pedestrian crossings scores 2 out of 5 points when evaluated with design criteria.

Table 4.6 : Evaluation of pedestrian crossings according to design criteria.

The Parameters for Evaluation	Provided (1)	Not provided (0)	Score (/5)
Short crossings at least 1.8 m wide, and ideally 2.4 m wide)	x		1
Pedestrian crossings every 50 to 100 m	x		1
Visible, wide and bright crossings		x	0
Raised crosswalks		x	0
No parking within 6 to 8 m of intersections, stop bars at least 3 m from crossings, and minimize visual obstructions within 3 to 5 m of crossings		x	0
		Total	**2**

4.3.2 Sidewalks

Necessary analyzes were made on the sidewalks around Zümrütevler Square where the child-friendly street transformation took place. The widths of the sidewalks were measured and observations were made of situations that would impede pedestrian flow on the sidewalks. The slopes of the ramps used for disabled access or baby stroller access when crossing the street were calculated. Measurements of sidewalk widths are shown on the map in Figure 4.17. Sidewalk widths were measured to be at least 1.96 m wide. These measured sidewalks do not have obstacles on the walking axes.

Figure 4.17 : Sidewalk widths (Superpool,2020)

The slopes of the ramps were calculated to facilitate access for wheelchairs, baby strollers, suitcases or wheeled bazaar bags when crossing the street. The slopes of the ramps are shown on the map in Figure 4.18. The ramp with the highest slope is 8% and the ramp with the lowest slope is 6%. Although the slopes of the ramps meet the standards, two bollards were found to create obstacles on the slope, as indicated in the pedestrian crossing section.

Figure 4.18 : Slope measurements of ramps (Superpool,2020)

According to Table 4.7, which evaluates the conformity of the analysis results with the design criteria, the site scored 3 out of 4 points. There are no chicanes in the area, but due to the form of the area, there is no need to slow traffic with a chicane.

Table 4.7 : Evaluation of sidewalks according to design criteria.

The Parameters for Evaluation	Provided (1)	Not provided (0)	Score (/4)
Visible corners	x		1
Continuous, accessible and obstruct-free pathways (at least 1.8–2.4 m wide in residential settings, 2.4–4.5 m wide in downtowns, school zones, or commercial areas)	x		1
Ideal pedestrian ramps (maximum slope of 10%, ideally 8%)	x		1
Chicanes		x	0
		Total	**3**

4.3.3 Urban furniture

There are 7 benches in the square part of the child-friendly street transformation and 3 benches in the new wide public space created opposite. In Figure 4.19, the locations and orientations of the benches are shown in the drone image. It is seen that the benches

create a space in itself by drawing a border with their location choices and orientations. It was observed that some benches were positioned facing each other to create social interaction. The observed social interactions are exemplified in Figure 4.20.

Figure 4.19 : Locations of seatings (Superpool,2020)

Figure 4.20 : Social interactions of people on the benches (Superpool,2020)

Measurements of the seating elements were made. Measurement information is given in Figure 4.21. The seating height of the benches was 43 cm and the seating width was measured as 30 cm. In the design criteria, it is stated that the height for toddlers should be 27 cm regarding the measurement details of the seating elements (Government of India, 2019).

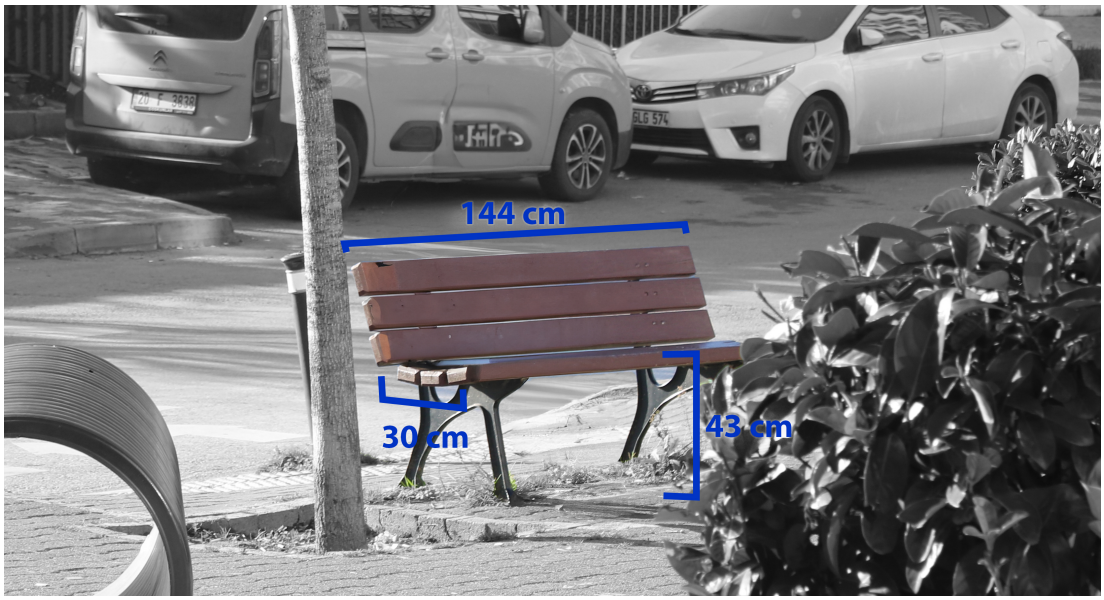

Figure 4.21 : Seating dimensions

The trees and benches in the space are placed side by side and in relation to each other. In Figure 4.22, blue circles represent trees and yellow rectangles represent benches. Benches that are directly related to the tree and can benefit from its shade are indicated with yellow filled rectangles. Due to the size of the trees, shade cannot be provided completely. Since the observation was made in the winter season, it is necessary to observe again when the leaves have not fallen.

Figure 4.22 : Location of trees and benches together (Superpool,2020)

The locations of the lighting are shown in Figure 4.23. Classical urban lighting was used and its capacity to illuminate the square and leave no dark areas is analyzed. As

a result, no specific lighting type was used for this area also the capacity of the lightings to light the place is not enough, leaving dark areas.

Figure 4.23 : Location of lighting elements (Superpool,2020)

One trash can was observed in the square and garbage containers were placed right next to it. The locations of the trash bins are shown in Figure 4.24 and the visuals of how a trash can is used from the area are shown in Figure 4.25.

Figure 4.24 : Location of trash cans (Superpool,2020)

Figure 4.25 : Trash cans on the square and next to square

No special orientation for children, public toilets, drinking fountains, wifi and charging, as well as shading and cooling elements other than trees were identified in the area. The results of other analyses on urban furniture were used to evaluate the appropriateness of the design criteria. This evaluation is given in Table 4.8 with the results. Zümrütevler Square meets 6 of the 13 criteria for urban furniture.

Table 4.8 : Evaluation of urban furniture according to design criteria.

The Parameters for Evaluation	Provided (1)	Not provided (0)	Score (/13)
Street furniture zones	x		1
Appropriate seating dimensions	x		1
Enough seatings (every 50 to 100 m)	x		1
Seating in various locations	x		1
Seating with shading	x		1
Seating with shelter and protection		x	0
Appropriate lighting		x	0
Child-friendly wayfinding solutions		x	0
Trash cans	x		1
Public toilets		x	0
Drinking fountains		x	0
Wi-fi and charging		x	0
Shading and cooling elements		x	0
		Total	**6**

4.3.4 Play opportunities

Creative play areas that will not take up much space in the square have been created and an artistic element has also been used. The solid red shapes shown in Figure 4.26 represent areas that offer play opportunities, while the red rectangle represents the artistic element. As in the comment made regarding the seating elements, these areas remain within the area created by the benches. In other words, they are associated with the seating areas. The visuals of the areas that offer play opportunities are exemplified in Figure 4.27.

Figure 4.26: Location of art and play spaces (Superpool,2020)

Figure 4.27 : Art and play spaces

During the field observation, no children were observed spending time in these playgrounds. Also, the fact that there were vehicles parked in the area may have caused the children to move away from the area. All three of the three parameters related to play opportunities in the design criteria are provided for this area (Table 4.9). However, it should be repeated that no children were observed evaluating these areas during the observation.

Table 4.9 : Evaluation of art and play spaces according to design criteria.

The Parameters for Evaluation	Provided (1)	Not provided (0)	Score (/3)
Incorporate art and play with seatings	x		1
Different types of learning	x		1
Creative play opportunities	x		1
		Total	**3**

4.3.5 Green opportunities

In the case study observations, it was observed that shrubs and different tree types were used in the area. In Figure 4.28, blue filled circles represent trees, and transparent blue representations represent shrubs. The pavement edges in the square and the large public area created opposite were designed with green buffers. It was determined that different plant types were used in different areas.

Figure 4.28: Location of green areas (Superpool,2020)

As a result of observations regarding the use of green space in the square, an evaluation was made based on the design criteria. While the area ensures plant diversity of various types and lengths across different zones included in the parameters, it does not include efforts such as the selection of plant species specific to the area or the integration of insect species. According to the parameters, attention should be paid to the preservation of existing trees, but in the old state of this area there were no trees. This parameter was considered not provided in this analysis. Therefore, based on the evaluation according to the parameters, Table 4.10 shows that the area received a score of 2 out of 5.

Table 4.10 : Evaluation of green opportunities according to design criteria.

The Parameters for Evaluation	Provided (1)	Not provided (0)	Score (/5)
Plant zones in different places	x		1
Different height trees for kids to enjoy	x		1
Room for insects and spiders		x	0
Indigenous and local species		x	0
Retain existing trees		x	0
		Total	**2**

4.3.6 Design materials

The design materials used in the Zümrütevler Square and its surroundings were examined. Information about bollards is shown in Figures 4.29 and 4.30. The distance between bollards was measured as 2.8 meters and the bollard lengths were measured as 60 cm.

Figure 4.29 : Location of bollards (Superpool,2020)

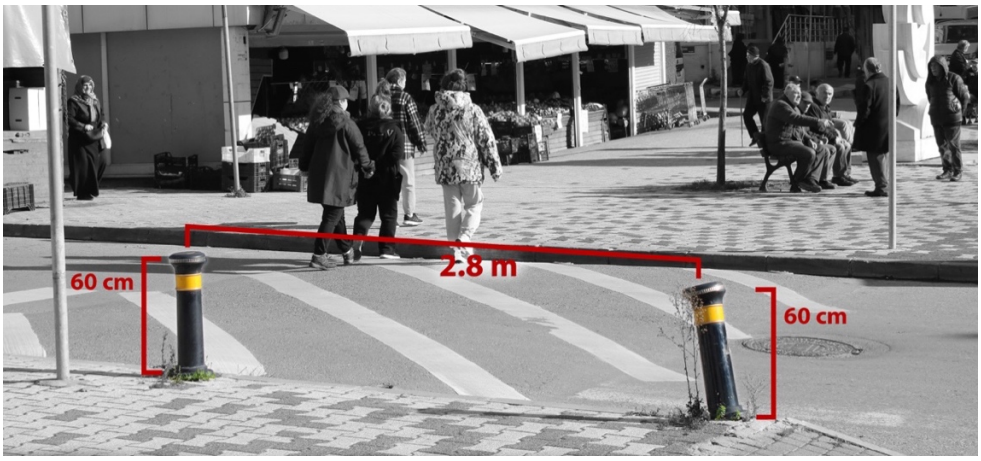

Figure 4.30 : Distance between bollards and their measurements

Besides bollards, a patterned surface treatment has also been applied in the area and these patterns do not serve for any directory purposes. However, this treatment is not made with child-friendly materials, nor is there any use of child-friendly flooring in other parts of the area. Although the parameters include the presence of obstacles between different textures, such conditions are not observed in this area. As a result shown in Table 4.11, 3 out of 6 parameters are met for this area.

Table 4.11 : Evaluation of design materials according to design criteria.

The Parameters for Evaluation	Provided (1)	Not provided (0)	Score (/6)
Engaging colorful, different patterns on sidewalks	x		1
Child-friendly ground cover materials		x	0
No obstruct in public realm		x	0
Obstacles between different pavements		x	0
Low fences	x		1
Boulders with min 1.2 m spacing	x		1
		Total	**3**

4.3.7 Results and discussion of analyses

The detailed analysis of design elements within the Zümrütevler Square transformation area reveals a mixed level of compliance with established child-friendly design criteria. Pedestrian crossings meet basic width standards and are sufficiently spaced within the immediate transformed zone; however, their faded visibility and limited distribution beyond this area reduce overall pedestrian safety and accessibility. Observations indicate that pedestrians often cross at informal points rather than designated crossings, highlighting a gap between design intention and user behavior.

Table 4.12 shows the summary of the evaluation according to the design detail parameters. Sidewalks in the area are generally adequate in width and free from major obstructions, with ramp slopes conforming to accessibility standards. Nonetheless, the presence of bollards on ramps compromises ease of access for disabled users, slightly diminishing the overall sidewalk performance. Urban furniture provision is limited but functional, with seating arrangements encouraging social interaction. Play opportunities are integrated within the seating zones, including artistic elements and creative play areas. Despite meeting all related parameters, actual observed usage by children was minimal, possibly due to the presence of parked vehicles, suggesting that spatial quality and safety perceptions may hinder play. Green elements demonstrate diversity in plant species and buffer zones. Regarding design materials, while bollards are appropriately spaced, surface treatments lack child-friendly properties and fail to provide functional texture variation, meeting only half of the evaluated parameters.

Table 4.12 : Evaluation of the case study according to design criteria.

The Parameters for Evaluation	Provided (1)	Not provided (0)	Score (/36)
Short crossings at least 1.8 m wide, and ideally 2.4 m wide)	x		1
Pedestrian crossings every 50 to 100 m	x		1
Visible, wide and bright crossings		x	0
Raised crosswalks		x	0
No parking within 6 to 8 m of intersections, stop bars at least 3 m from crossings, and minimize visual obstructions within 3 to 5 m of crossings		x	0
Visible corners	x		1
Continuous, accessible and obstruct-free pathways (at least 1.8–2.4 m wide in residential settings, 2.4–4.5 m wide in downtowns, school zones, or commercial areas)	x		1
Ideal pedestrian ramps (maximum slope of 10%, ideally 8%)	x		1
Chicanes		x	0
Street furniture zones	x		1
Appropriate seating dimensions	x		1
Enough seatings (every 50 to 100 m)	x		1
Seating in various locations	x		1
Seating with shading	x		1
Seating with shelter and protection		x	0
Appropriate lighting		x	0
Child-friendly wayfinding solutions		x	0
Trash cans	x		1
Public toilets		x	0
Drinking fountains		x	0
Wi-fi and charging		x	0
Shading and cooling elements		x	0
Incorporate art and play with seatings	x		1
Different types of learning	x		1
Creative play opportunities	x		1
Plant zones in different places	x		1
Different height trees for kids to enjoy	x		1
Room for insects and spiders		x	0
Indigenous and local species		x	0
Retain existing trees		x	0
Engaging colorful, different patterns on sidewalks	x		1
Child-friendly ground cover materials		x	0
No obstruct in public realm		x	0
Obstacles between different pavements			
Low fences	x		1
Boulders with min 1.2 m spacing	x		1
		Total	**19**

Overall, according to the parameters gathered from different design guidelines, the transformation demonstrates a commitment to several child-friendly design aspects but falls short in key areas such as accessibility, material choice, and user-centered functionality. Although the applications in design details are insufficient in terms of child-friendly design, the applicability of some parameters in every area should be

questioned. The question "If each parameter was really provided here, would it be possible to provide a child-friendly area definition when user behaviors were examined?" should be asked. These findings of the thesis research suggest that while the project lays a foundation for a child-friendly environment, further improvements are needed to fully realize its potential in supporting independent and safe child mobility.

4.4 Pedestrian Behaviours

Apart from the analyzes made in order to evaluate them under the design criteria, the relationships of these design details with the users of the space were also observed. On January 13, 2025, user behaviors were analyzed for 15 minutes between 14.35-14.50 and pedestrian flow routes were analyzed for 15 minutes between 15.00-15.15. In addition, some notes taken while measuring, counting, photographing and user observation in the area will be explained in relation to the design details.

User behaviors and the directions they used were observed. A map was prepared in Figure 4.23 for the analysis results of which routes users used during the 15-minute user behavior observation on January 13, 2025.

In addition to the evaluations conducted under the framework of design criteria, the relationship between the design details and the actual users of the space was also observed through field-based methods. On January 13, 2025, user behavior was monitored for 15 minutes between 14:35 and 14:50, followed by an analysis of pedestrian flow patterns conducted between 15:00 and 15:15. The time period was selected on purpose, for it coincides with the time when students leave school and return home. During these observation periods, data were collected through methods such as measurement, pedestrian counting, photography, and field note-taking. The insights obtained from these activities are discussed in relation to specific design elements.

User behaviors, including movement patterns and frequently used directions within the space, were recorded. The outcomes of the user movement analysis, based on the 15-minute observation period, are illustrated in Figure 4.31, which presents the commonly used pedestrian routes within the area on the specified date and time. It was noted that individuals using the area primarily as a passage were mostly caregivers

accompanied by children, as well as people who had completed their shopping and were heading in a particular direction. The fact that this observation was conducted around school dismissal time substantiates the finding that children and their caregivers predominantly utilize the space for transit purposes.

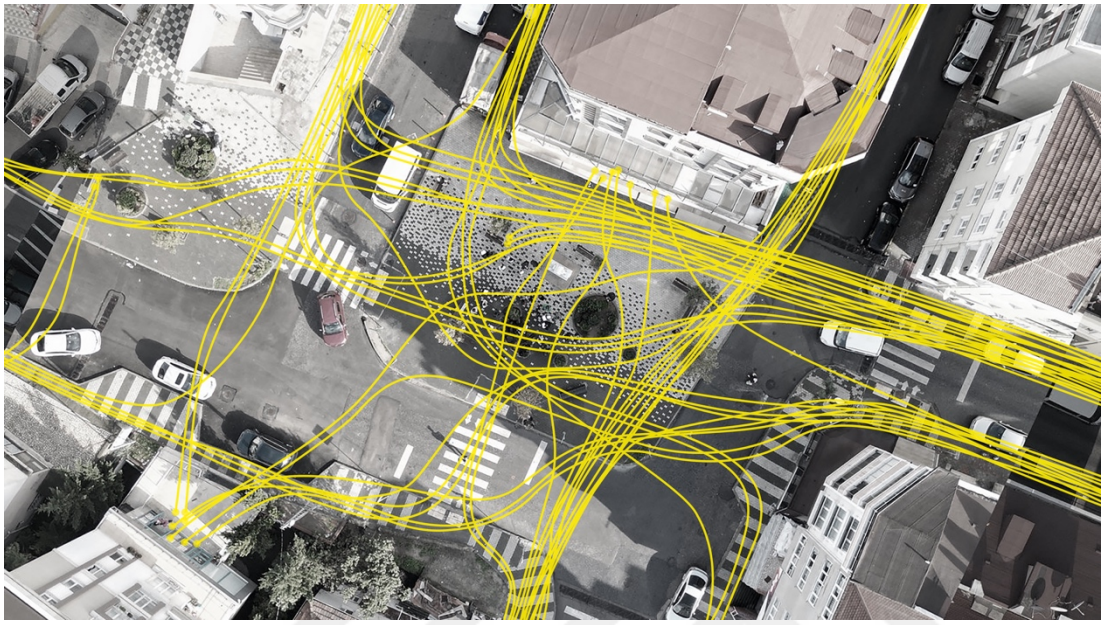

Figure 4.31 : The use flow map (Superpool,2020)

Although Figure 4.31 indicates that a majority of the square appears to be in use, it is important to note that the presence of parked vehicles significantly affects pedestrian movement and undermines the definition of a child-friendly environment. As documented in Figure 4.32, pedestrians are compelled to navigate around parked vehicles upon crossing the street to access the square.

Figure 4.32 : Users cannot use the area comfortably because of the parked cars

In addition to the continued dominance of vehicles in the area, photographic documentation conducted outside the user movement observation hours revealed that some pedestrians, including those accompanied by children, opted to walk along the vehicular road rather than utilize the available open square. This situation is illustrated in Figure 4.33. Apart from this, photographic documentation of improper pedestrian crossing behaviors was also compiled and presented in Figure 4.34.

Figure 4.33 : A child and his caregiver not using the sidewalk

Figure 4.34 : Pedestrians not using the pedestrian crossings

A map was prepared in Figure 4.35 regarding the sitting and standing actions during the 15-minute user behavior observation made on January 13, 2025. Users performing the sitting action are shown in red, and standing users are shown in blue. It has been observed that the actions of standing around the seating elements are carried out for socializing purposes.

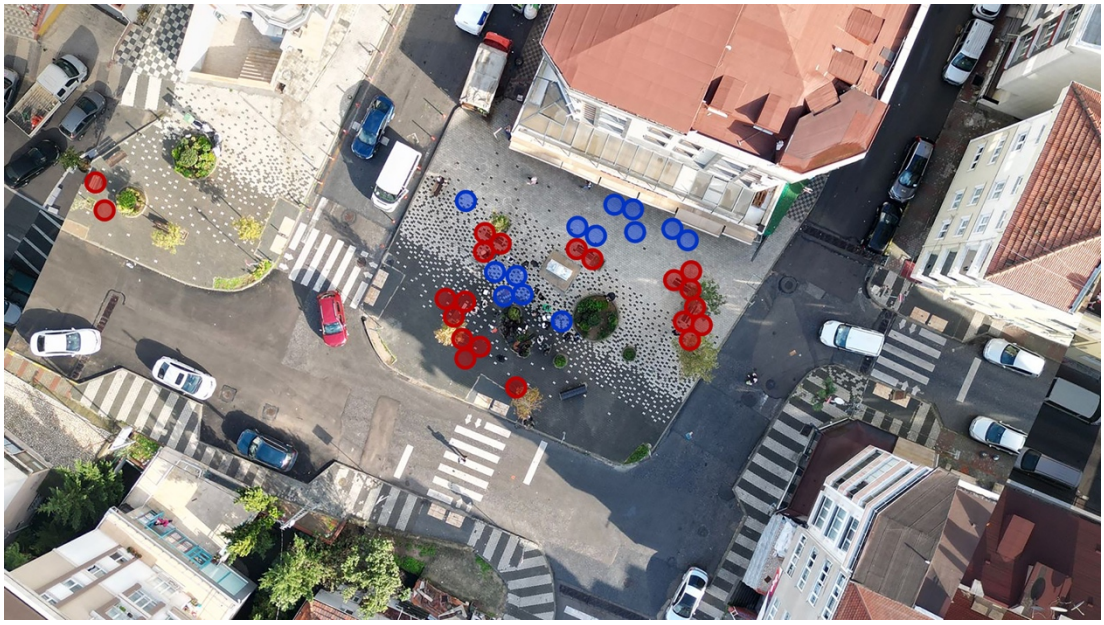

Figure 4.35 : User behaviour map (Superpool,2020)

It was identified that the observed socialization activities were primarily conducted by older male individuals, who actively utilized this space. The situation is photographed

as shown in Figure 4.36. It is noteworthy that these individuals, who frequently used the space designed with the aim of fostering a child-friendly environment, were not the caregivers of any children.

Figure 4.36 : Elderly people using the area for rest and chatting

As stated at the beginning of this section, when the transformed area is evaluated from the perspective of children and their caregivers — the primary target groups of the design intervention — it was determined through both measurements and photographic documentation that the area was used solely as a transitional route. These observations were photographically documented and are presented in Figure 4.37.

Figure 4.37 : Children and their caregivers using the area

The findings obtained through behavioral observation and pedestrian flow analysis reveal a discrepancy between the intended child-friendly design goals and the actual patterns of use. While the space was designed to support stationary and interactive engagement by children and caregivers, empirical data indicate its dominant use as a transit corridor. Additionally, the continued vehicular presence and misuse of pedestrian pathways further diminish its effectiveness as a child-friendly public space. These insights highlight the need for further design interventions that better accommodate and encourage the intended user groups.

4.5 Chapter Evaluation

This chapter systematically evaluated the child-friendly street transformation in Zümrütevler Neighborhood across three scales—process, neighborhood, and design detail—guided by the criteria established in the research methodology. The findings show that the transformation, although context-sensitive and participatory at the project scale, lacks integration into broader neighborhood systems and urban policy frameworks.

At the process level, the transformation was realized through a two-phased, participatory, and adaptive design approach, informed by data-driven methods and institutional collaboration. Despite the absence of a higher-scale planning mandate, the

project achieved significant stakeholder coordination and included children and caregivers in the decision-making process. Notably, the rehearsal phase proved critical in refining the final design and securing public acceptance, underscoring the value of tactical urbanism in child-friendly planning.

At the neighborhood scale, however, the transformation revealed substantial limitations. Accessibility analyses demonstrated that a majority of residential areas do not fall within walkable distances to essential child-focused amenities, and traffic calming interventions remain localized around the project site. Despite this, the neighborhood benefits from relatively active street frontages, which partially supports children's independent mobility. These results highlight the disjunction between localized spatial improvements and systemic neighborhood-level planning.

At the design detail scale, the spatial components partially fulfill child-friendly urban design criteria. While physical elements such as sidewalk widths, ramps, crossings, and urban furniture mostly comply with technical standards, user observations reveal a gap between design intentions and everyday use. Children and caregivers primarily use the space as a transit route rather than a destination, and informal crossing behaviors highlight issues of perceived safety and functionality. Moreover, the dominance of vehicles and limited playful constrain children's autonomous use. These insights underline the importance of designing not only for technical compliance but also for lived experience.

When viewed holistically, the evaluation scores based on the defined parameters tend to fall below the medium threshold. This indicates a need to critically question the relevance and applicability of the selected parameters in relation to the site’s physical characteristics and its socio-spatial context. Not every parameter may be necessary or meaningful in every project or location. In some cases, specific criteria might not be needed at all, depending on the spatial configuration or social composition of the area. This observation suggests that while standardized criteria are essential for objective assessment, they must be applied with contextual sensitivity to ensure that they truly reflect the needs and dynamics of the target environment. Ultimately, the case illustrates that spatial quality alone is insufficient; fostering genuinely child-friendly environments demands integrated, cross-scale urban strategies that align physical design with everyday behavioral patterns.

5. CONCLUSION

The concept of child-friendly cities can be addressed across many dimensions and depths. Local governments increasingly implement child-friendly street transformation projects to promote children's independent mobility. These initiatives are based on the widespread belief that children who can move safely and freely in cities will grow up healthier and help create more livable societies. However, while these projects represent positive steps, the long-term sustainability of the child-friendly identity in such transformations remains uncertain. This thesis therefore focuses on how the child-friendly character of urban spaces can be preserved over time, identifying the key parameters that support this continuity and examining the obstacles that may arise throughout implementation and transition phases. In addition to its thematic focus, this research emphasizes the importance of multi-scalar evaluation in urban transformation. Unlike many studies that remain at a highly localized and minor level, this thesis highlights that child-friendly interventions must not only affect their immediate surroundings but also be designed as interconnected parts of a broader urban system. Only through such integrated and scale-sensitive planning can truly child-friendly cities be realized.

Child-friendly street transformations are typically implemented in two phases. The first is a rehearsal phase, which employs tactical urbanism principles and incorporates public feedback. The second involves the permanent implementation of the interventions. Within this context, the transformation process of Zümrütevler Square in Istanbul was selected as the case study of this research. The area was evaluated at three different spatial scales, using an original set of evaluation criteria developed based on child-friendly design guides. This approach not only allows for an inter-scalar assessment of urban transformation but also contributes to the literature by integrating design details and user behaviors into the evaluation framework—an often overlooked dimension in existing studies. It is also important to note that the parameters developed in this methodology may not be universally applicable across all sites. Each urban area

is unique in terms of its physical structure, demographics, and user needs, and thus requires a context-specific design approach.

Field observations and spatial analysis revealed that some features initially defined as part of the child-friendly transformation were lost during and after the implementation. Despite these shortcomings, the project remains notable as Turkey's first example of a tactical urbanism-based child-friendly transformation that successfully transitioned to a permanent phase. One of the most striking findings was that designing for children ultimately resulted in a space that benefits all users. The project not only supported children's use of the space but also contributed to the pedestrianization of the area, creating a more inclusive and accessible environment overall. However, the continued presence of vehicle intrusion into pedestrian-prioritized areas points to gaps in enforcement and strategy, undermining the intended use and safety of the space. Moreover, observations confirmed that design criteria alone are insufficient to evaluate the success of spatial transformations. Systematic observation of actual user behavior and spatial usage is essential for assessing how a space truly functions.

In the case of Zümrütevler Square, when examining the age group and density of space users, it became apparent that the space functions more as a pedestrian-friendly area than a child-centered one. The majority of users were elderly male individuals, which may discourage children and their caregivers from engaging with the space. This indicates a clear need for design interventions that increase child visibility—for example, integrating play opportunities more visibly into the square. Without specific design elements that explicitly communicate its child-friendly purpose, the space may fail to convey this identity and underperform in actual child usage.

Throughout the transformation process, coordination among multiple institutions with overlapping jurisdiction created significant challenges in achieving a coherent and unified design outcome. This institutional complexity limited the potential for iterative development and hindered efficient implementation. The case study of this thesis has demonstrated the critical importance of interdepartmental collaboration. Unless the concept is collectively embraced by all responsible units, implementation may be incomplete or fragmented, ultimately leading to the erosion of the space's child-friendly identity. While the rehearsal phase provided valuable preliminary data for designing with pedestrians and children in mind, its necessity in future implementations can also be critically examined. What would have changed if the

square had moved directly to permanent design without a rehearsal phase? Could certain elements have been missed or different perspectives brought into play? These questions should be part of the evaluative framework used by public authorities. Although the local government initially considered conducting a second rehearsal phase to refine the design, this step was never realized. The absence of this phase weakened participatory opportunities and limited the feedback loop essential to child-centered urban design.

Despite the challenges, the Zümrütevler Square project provides an important precedent for child-friendly and human-oriented urban spaces, especially within densely populated metropolitan areas like Istanbul. As the first of its kind in Turkey, the project demonstrates how tactical urbanism can be used not only as a short-term intervention but also as a transitional method toward long-term spatial transformation.

One of the key contributions of this study is its ability to evaluate space across multiple scales, integrating local interventions into a broader spatial logic. This reinforces the idea that child-friendly urban design cannot remain fragmented or isolated; instead, urban administrations must assess interventions not just within their immediate vicinity but also in relation to their spatial context and connectivity.

The thesis contributes to the literature by:

- Developing a multi-scalar and behavior-sensitive evaluation framework
- Demonstrating the need for ongoing observation, not just design-based assessments
- Highlighting institutional and operational dynamics that affect project outcomes

Future research could benefit from a more in-depth analysis of the rehearsal phase, which remains underexplored despite its crucial role in participatory urban transformation. A second trial implementation of revised designs—based on public feedback—could have allowed for a more democratic and iterative approach. Although this step was omitted in the Zümrütevler case, the documentation and evaluation of the existing process still represent a valuable contribution.

Finally, this study emphasizes the importance of long-term commitment and institutional alignment for child-friendly urban planning, especially in rapidly

urbanizing cities where pressure on public spaces is high. Further studies should consider how rehearsal-phase evaluations and user observations can shape more context-sensitive and effective outcomes, and encourage local governments to institutionalize this phase within the standard project cycle. Due to the fact that the rehearsal phase had already been completed before this study began, it could not be directly incorporated into the research process. However, future studies should prioritize evaluation and observation during this preliminary phase, as this would offer a deeper, more grounded understanding and lead to stronger and more resilient outcomes.

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APPENDICES

APPENDIX A: Child friendly street parameters prepared by NACTO & GDCI
APPENDIX B: Specifications of child friendly facilities compiled from the design guide of Government of India
APPENDIX C: Child friendly street parameters from the design guide of Government of India
APPENDIX D: Semi-structured interview with the local government
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APPENDIX A: Child friendly street parameters prepared by NACTO & GDCI

Table A.1: Design criteria for child-friendly streets (NACTO & GDCI, 2019).

Design Elements	Details (Optional)
Pedestrian crossings	Short crossings and compact intersections Alignment and frequent spacing Traffic calming Legible At-grade and accessible Visibility and daylighting Signals
Sidewalks	Frontage zone Clear path Street furniture zone Buffer zone Curbside Pedestrian ramps Active facades Engaging surfaces
Pause and play spaces	Informal and formal spaces Co-locate spaces Social interaction Educational or fun elements Pause, sit, and stay
Seating	Use appropriate dimensions Install enough seating Consider a variety of locations Incorporate art and play Use varied materials Consider unexpected uses
Play and learning	Different typed of learning Ground surfaces Vertical surfaces Landscape elements Lighting Street furniture Utility poles
Nature and landscaping	Co-locate trees with other elements Consider children's heights Allow kids to engage with nature Consider plant species for kids Plant more trees Build room for insects and spiders
Transit stops	Make transit boarding accessible Incorporate seating Co-locate street furniture Provide shelter Share transit information Integrate play and learning
Cycle infrastructure	Curb zone Cycleway clear path Buffer Signs and markings Corner refuge island Cycle signals Cycle parking Raised cycle crossings
Cycle facilities	Protected cycle tracks Cycle street
Additional elements	Street lighting Wayfinding Trash cans Public toilets Drinking fountains Wi-fi and charging

APPENDIX B: Specifications of child friendly facilities compiled from the design guide of Government of India

Table B.1: ITC specific recommended changes to norms for facilities in a neighbourhood (The Ministry of Housing and Urban Affairs of Government of India, 2019)

Facility	Hierarchy	Distance	Amount	Area	Related Indicator
Open Spaces	Tot Lot (Infants and caregivers: 0-2 yrs.)	Placed at walking distance of maximum 10 minutes or 300 meters.	6-15	50-125 m² Covering 750 m² in total	8
	Housing Area Park (Toddlers with caregivers: 2-3 yrs.)	Placed at 200-300 meters.	3-6 (3 according to URDPFI Guidelines, 2015)	2500-5000 m^2 Covering 15.000 m² in total	9
	Neighborhood Park/ Playground (Toddlers with or without caregivers: 3-5 yrs.)	Placed at 200-300 meters.	3-4 (1 according to URDPFI Guidelines, 2015)	4500-6000 m^2 Covering 18000 m² in total	10
	Average per capita Open Space	-	3-4 m^2 per person	-	11 12
Education Facilities	Day Care Centers or Creches (ITC: 6 months to 6 years)	Walking distance of 5-10 minutes or 150-300 meters	6-15	150-200 ft^2 6-8 ft² per child (According to The Maternity Benefit Act, 2017)	2 4 6
	Pre-Primary, Nursery School (Toddlers: 3-5 yrs.)	200-400 meters	6 (According to URDPFI Guidelines, 2015)	800 m^2 each (According to URDPFI Guidelines, 2015)	
	Primary School (Toddlers: Above 5 yrs.)	400-600 meters	3 (According to URDPFI Guidelines, 2015)	4,000 m2 (2,000 m2 built foot print and 2,000 m2 playground)	47
Health Care Facilities	Dispensary (ITCs)	Placed at walking distance of 5-10 minutes or 150-300 meters	2-3 (1 according to URDPFI Guidelines, 2015)	800-1200 m2	50
	Anganwadi (rural child health center) (ITCs)	Placed at walking distance of 5-10 minutes or 150-300 meters	3 (According to URDPFI Guidelines, 2015)	200-300 m2	48

APPENDIX C: Child friendly street parameters from the design guide of Government of India

Table C.1: Elements for streets giving in ITCN guidelines (The Ministry of Housing and Urban Affairs of Government of India, 2019).

Objective	Components	Actions
Safe Streets	Active façade along routing	Visible corners and streets Open and active facades along pedestrian routes No obstructs in public realm Carefully placed neighborhood amenities
	Private- public interface	No boundary walls or lower Windows and main doorways Residential edge
	Protective elements from traffic	Low fences Parked cars far away Traffic calming High fences if plays are with ball Obstacles between pavement differences Boulders or sturdy bollards with minimum 1.2 m spacing
	Crossings	Crossings with regular interval Large enough space on the median No obstruct on crossings Visible crossings (Example: flashing lights) Traffic lights are safer Brightly colored
	Lighting	Reflect the use of the public realm Low-level lighting Frequent intervals, at least every 30 meters No shadow zones Lighting expert to calculate the level No significant changes Position of lightings with trees and plants Give added value
	ITC wayfinding	Eye level of 95 cm. Bright and recognizable features Use of existing landmarks Recognizable objects with interval Informal routes by kids
Green Streets	Guidelines for street planting	Planting at different height-trees Plants in various zones Climbing plants against facades Indigenous plants and local species Retain existing trees
	Shading and cooling elements	Natural shading Continuous shade Trellises overgrown with climbing plants Shaded stops Resting elements with shades

Table C.1 (continued): Elements for streets giving in ITCN guidelines (The Ministry of Housing and Urban Affairs of Government of India, 2019).

Objective	Components	Actions
Accessible Streets	Ground cover materials and colors	Avoid uneven ground cover materials Smooth path over gravel or soil pavements Different types of patterns Colorful pavements Child-friendly materials
	Inclination ramps	Ramps with an incline of 5% to 6.7% Flat 5-foot long plateaus after every vertical 30 inches of elevation 1.8 meters wide minimum 1.2 meters space between if bollards needed Handrail at the height of a small kid Tactile paving at start and end Stairs with 18-20 inches treads, 3-4 inches risers to create a gentler slope (16-20%)
	Continuous borders	Seating height 200 mm for toddlers Edges wide enough to double up as seating Gently sloping retaining wall and pot Wooden slats or local durable materials
	Bench types	Bollards at 400-500 mm height, flat tops Benches as low as 270 mm Wider flat edge to top of low walls Low depth water Cut logs or large stonesat the edge
Playful & Inclusive	Playful furniture	Street furniture through eye level of 95 cm Low benches with flat tops Colorful street furniture Planters that have railings
	Sidewalk games	Patterned pavement Smoot flat area of pavement to draw Paint simple lines or square Some shapes on pavement for kids to fill in Contextual easy games
	Outdoor seating	Allow free space at least 1.8 meters Shading Shelter and protection
	Pop-up playing	Temporary structures Mobile pop-up play Temporary structures for small part of pavement
	Temporary street closure	The most viable Inform all residents Organize events Clear signs to direct the diverted traffic

APPENDIX D: Semi-structured interview with the local government

ISTANBUL TECHNICAL UNIVERSITY
GRADUATE SCHOOL
URBAN DESIGN MASTER PROGRAM

Derya KOÇAŞ – Thesis Study

SEMI-STRUCTURED INTERVIEW SHEET

Maltepe Municipality, 30.04.2025, 10.00, Online Interview

1. How did you develop your orientation towards the idea of child-friendly design? How did you decide that the rehearsal phase in this area should be with a child-friendly design approach? Was there a decision about this in your upper-scale strategy studies? Did you choose the project area according to certain criteria?

Our child-friendly city strategies were actually shaped by an orientation coming from high-level documents such as strategic plans and presidential declarations. However, we had some question marks about the method. At this point, the Kent95 program helped us a lot. At that time, there was a family support program such as "home visit-based parent coaching" that we received training from Kent95. This program was especially aimed at parents of children aged 0-3 and aimed to help parents establish a healthier relationship with their children. This process also allowed us to get to know other works of Kent95. For example, we discovered components such as data-based decision-making processes and the urban transformation program that aims to make the city more livable for children aged 0-3 and their caregivers. The urban transformation program carried out together with Superpool suggested innovative methods to the question of "What kind of transformation should be achieved?" and we adapted to these suggestions.

In fact, I did not take much part in the decision-making process regarding the selection of the project area. The Directorate of Public Works and Engineering had suggested various problematic areas. The selected area was an area where vehicles passed by quickly, was used as a parking lot in the middle and was never used comfortably by pedestrians. There were also intense complaints from pedestrians in this area. Zümrütevler Neighborhood was a disadvantaged neighborhood and there was no square here before. This was also an effective factor in the selection of the area.

- After this project, have you done a similar square work in another location in the same neighborhood?

No.

2. I know that you implemented this application by including stakeholders. In which parts of this project were BvLF and Superpool involved? Are there any other project stakeholders you would like to mention? How did you decide to proceed with these stakeholders?

During the Kent95 program, we, as Superpool and Maltepe Municipality, also started to gain new information. Ankita from GDCI did the supervision and we worked together for three days on the implementation point. This was the first tactical urbanization project in Türkiye, so it was a learning process for all of us.

We could not include IMM sufficiently in the process. We had difficulty explaining ourselves at times because it was not a street under IMM's responsibility and we thought we could do everything. However, since the decision to build the pedestrian crossings, we added belonged to IMM, we realized that we needed to interact with them more during the process.

Superpool worked with us on issues such as data collection, design and geometric form during this process. We wanted to apply the lane boundaries according to what we knew, but Superpool made suggestions to limit vehicle use. At this point, we decided to find a middle ground. We also made a few arrangements in the field in the revisions made regarding vehicle use and geometric tests.

3. Did you include children and their caregivers in the decision-making process or during the rehearsal implementation process? With what methods and how did you do it?

Children and parents participated in the design decisions after the rehearsal. We conducted a data collection process by sending staff to the field and also conducted satisfaction surveys. During this process, we established closer contact with the public and it was a different experience for us as municipality employees.

The advantage of Superpool in this process was this: They had the opportunity to meet with the citizens with an identity different from the municipality. They acted as a bridge between the municipality and the public. This interaction was very sincere; I saw them sitting on the bench together, chatting and making design decisions together. It was a very different experience for us to establish such a close relationship with the public, leaving the identity of municipality officials behind.

It was also meaningful to invite families with children to such rehearsals. Because getting the children's opinions ensures that the process is truly participatory and inclusive. This kind of participation ensures that not only the adults but also the children's thoughts are reflected in the project.

4. Was the project financed with a grant or entirely from the institution's budget?

As an institution, we did not make any purchases. We used the existing materials in the warehouse and proceeded with our own labor. Some materials such as paint and carpet were provided with a BvLF grant through Superpool. However, the real grant was actually the experience provided to us; this experience became our most valuable resource contributing to the project.

5. How did the process of ensuring coordination in the project area begin? What kind of approach did you adopt from the very beginning?

At the beginning of the process, we first established coordination within ourselves. We came together with the relevant directorates—police, cleaning, environmental protection, technical services, parks and gardens—and held a comprehensive meeting in the Assembly Hall. Mayor Ali Kılıç and deputy mayors also attended the meeting. We explained and shared in detail what we wanted to do. We clarified all these details, which directorate will close which road, who will undertake what. But I can say that we actually learned many things together while carrying out the process in the field. We tried the field arrangements by conducting a geometry test with the police barriers in the field.

As the Strategy Development Directorate, we first brought together our internal stakeholders and took on the responsibility of coordination in the field. Incoming

requests were reaching us directly, and we organized them with the relevant units. The relations with external stakeholders were also our responsibility; in case of any need or disruption, we would provide the solution.

Superpool's contributions in terms of human contact were very valuable during this process. In particular, their support during the timelapse camera installation process ensured that the process was enriched in terms of both documentation and interaction.

6. How did you measure user experiences during the implementation? How do you continue to measure reactions in the area after the implementation?

During the implementation process, we had classic before-after tests. Apart from that, we visited the field frequently. We tried to sit on benches and chat one-on-one with the citizens who were in the field at that time. This one-on-one interaction was very important to us. Because monitoring and observation are always very valuable not only quantitatively but also qualitatively. We made observations at different hours; there were even times when we went and checked the field at 3 a.m. We especially looked at details such as whether the cars were parking or whether the buoys were in place.

7. What kind of difficulties did you experience during the rehearsal phase? Can you tell us about the difficulties you are currently experiencing in the area?

The biggest challenge was to explain to both the citizens and our internal stakeholders that the rehearsal was not a permanent application but a temporary one. We had a hard time explaining it not only to the citizens but even to the IMM or our municipality workers because we did not have a similar application that we could show as an example. Then the pandemic started. We had taken steps to switch to a permanent application, but the pandemic broke out, we had budget problems and had to postpone the project for about a year. During this process, we also started to lose the gains in the field. For example, we saw that a bread buffet that we had removed for the implementation was re-placed in the field with the pandemic. When the pandemic eased and we started the construction works again as a municipality, we took action quickly and tried to transform the area again without going to tender, with the materials we had.

8. What obstacles or potentials did you encounter when converting the design in rehearsal to a permanent application? How did you manage to solve the problems?

Since the road in front of the market was pedestrianized, the market had a reflex to spread and occupy there. We always tried to solve the situation by sending the municipal police. The fact that the citizens thought that this area was made only for the market also caused them to develop negative views towards the project. The customers of the market or the vehicles belonging to the market also tried to use this area. Another issue was a question that always remained in our minds: "What would it be like if we moved the area to the other side and turned it into a square?" We had the idea of doing a second rehearsal, but since a rehearsal of this scale was the first in Türkiye, starting such a process again required courage.

9. What were the critical situations that existed during the rehearsal phase but could **not be implemented permanently**?

There were no major differences, there were generally small changes. Still, I think the fact that the colorful patterns we applied on the ground during the rehearsal process could not be transferred to the permanent application made a significant difference visually.

What gave meaning to the project and what I considered critical was the flexibility the rehearsal process provided us. With this experience, we had the chance to test what worked.

10. What kind of revisions did you develop during the rehearsal period that would affect the permanent application design? Did you make revisions mostly in design details, or were revisions added to the decision-making mechanism?

We did not make radical changes, we made revisions on the design scale. As I mentioned in the previous question, especially not being able to carry the colored ground application to a permanent one created a significant deficiency in terms of visuals. But there was no major revision in the decision mechanism; the general direction and approach remained the same.

APPENDIX E: Semi-structured interview with the contractor company

ISTANBUL TECHNICAL UNIVERSITY
GRADUATE SCHOOL
URBAN DESIGN MASTER PROGRAM

Derya KOÇAŞ – Thesis Study

SEMI-STRUCTURED INTERVIEW SHEET

Superpool, 25.04.2025, 17.00, Online Interview

1. What kind of decision mechanism did you follow to make the project area Zümrütevler Square?

The Urban95 Program was being implemented in collaboration with four district municipalities in Istanbul: Beyoğlu, Sultanbeyli, Sarıyer, and Maltepe. Following the decision to conduct a pilot project in Istanbul in partnership with NACTO (National Association of City Transportation Officials), we asked the municipalities to propose suitable locations for the implementation. We then visited and assessed the proposed areas from Sarıyer, Sultanbeyli, and Maltepe, first together with representatives from NACTO, and later with the Global Designing Cities Initiative (GDCI). Based on these evaluations, we decided to initiate the pilot project in the Maltepe district.

During the process of selecting the project site in the Maltepe district, we contacted the Strategy Development Directorate and the Directorate of Public Works and Engineering of the Maltepe Municipality to request a suitable location for the implementation. During this process, the Director of Public Works and Engineering at the time mentioned that the proposed area had a complex structure that had remained unresolved for a long period, suggesting that it would be suitable for the pilot project.

The selected site's location along the E-5 highway was strategically significant from an urban planning perspective. Additionally, in line with our objective to intervene in areas with high concentrations of socio-economically disadvantaged groups, we found the selection of the Zümrütevler neighborhood to be meaningful. Zümrütevler was also a decisive factor in the site selection process, as it is the most densely populated neighborhood in the Maltepe district.

2. Can you share with us the decision-making process of the project’s dry run? What were the main factors taken into consideration at this stage?

Since this was the first implementation of the project in Istanbul, the technical guidance we received from the GDCI was extremely valuable during the pilot phase. As part of our collaboration, we participated in a training program focused on data collection methodologies. We then conducted systematic field data collection over the course of three weeks, working three days per week. The data we gathered formed the basis for our decisions regarding geometric modifications in the project area.

One of the most important things, I think during the process, is to gather all directorates of the municipality to inform about task distribution and project planning. Throughout this process, we worked closely with the Strategy Development Directorate of the Maltepe Municipality, which played a key role in ensuring internal coordination across municipal departments. Additionaly, it is very important to mention all support of Ankita Chachra, GDCI's Program Manager, who played an active role and being in the construction area during all interim implementation process. Her guidance helped to coordinate the process and shaping our implementation decisions. All our decision-making activities were carried out through joint meetings involving three parties: GDCI, Maltepe Municipality, and ourselves as the representatives of Superpool.

3. What criteria did you use to determine the design details in the project?

Design decisions were made based on the GDCI's Global Street Design Guide and the data reflecting the current usage status obtained from our observations and measurements in the field over 3 weeks.

4. What were the challenges you faced during the transition from a dry run to a permanent implementation and how did you manage to solve them?

In terms of design, it was a matter of transforming a colorful application with permanent application materials in the hands of the municipality. We thought about how we could give the liveliness and movement of the patterns we gave on the ground during the interim phase with only keystones. In the end, the result in the permanent application came out.

In terms of geometry, there was also flexibility in the lane widths in the permanent application. The width of the two-way vehicle road was forced to be changed to permanent as 7 m instead of 6 m. This caused the parking habit to continue and caused problems with turning of vehicles. Now the municipality is trying to narrow the lane with plastic buoys.

Another issue was pedestrian crossings. IMM did not accept the pedestrian crossings in our proposal, saying that pedestrian crossings over a certain amount cannot be used according to the regulation. They do not allow pedestrian crossings to be placed on all 4 sides of the intersections, they usually always cancel 1 or 2 of them. Since the pedestrian crossings we requested did not pass IMM's regulation, they did not meet the pedestrian tracks that pedestrians always use.

The elevated pedestrian crossing application could not be done because we could not get permission again. We thought that the elevated pedestrian crossings could be implemented until the interlocking stones were laid in the square. We did not add a ramp since we had a raised pedestrian crossing suggestion in the rehearsal phase. But ramps were built later.

- Instead of the elevated pedestrian crossing that you suggested during the rehearsal phase but did not implement permanently, there are currently speed bumps on both sides of the square. Were these speed bumps made during the rehearsal phase or were they added after the permanent implementation to slow down vehicles?

Those speed bumps were implemented as interim solutions that we produced later. Since we cannot build an elevated pedestrian crossing, we developed this solution so that we can at least build a wide speed bump so that pedestrians can use it.

5. At what stages of the project and to what extent were children and caregivers involved in the project? How did you communicate effectively and what methods did you use to collect their feedback?

The children of the neighborhood were always with us while collecting data. They were always with us during the implementation week and wanted to help with the painting. As the field team, we were the team that observed their usage. We conducted a survey about their perception of safety before and after. We tried to get their opinions with feedback boards like the opening.

6. How did the feedback from the children and caregivers affect the final design and implementation of the project? Were there any changes made based on this feedback?

We have two memories about this issue. When the children were moving to the permanent implementation, they thought the sand under the paving stones were part of the design. They came with their sand toys and started playing under the tree we

planted. Due to the design and manufacturing requirements, we had to pave the sand they were playing on later.

A grandmother asked us if her grandson should stay like this while he was playing with the sand. She said it was nice like this, but this is where the market is, let him decide. When we tried to explain that this was a public space and that he had the right to have a say, we had a hard time getting along. We had to convince him that the area was a public space.

In general, we were always together with the children from the beginning of the rehearsal. They were always with us during the application phase. After the permanent application, there were 1-2 people who said that they could not skate the scooter comfortably because of the keystones. But there was no part that we revised with the feedback of the children in the whole process. I can only add that the corrugated pipe we used in the rehearsal application was used by fixing it in the permanent application as well, since the children loved it very much.

7. Were there any unexpected challenges in the overall implementation of the project and how did these affect the final implementation of the project?

A hardware store located in the project area actually had its own parking lot; however, it insisted on keeping 1-2 vehicles parked on the street there at all times. It was thought that this habit would perhaps be abandoned during the rehearsal process. However, since the parked vehicles particularly obstructed the turning maneuvers of buses, a special revision was required in the permanent application.

The reaction of the minibus drivers was quite intense at the beginning of the process. Meetings were held thanks to the Minibus Drivers Federation's connection with the Headman of Zümrütevler Neighbourhood. During these meetings, we learned that minibuses were required to be in certain locations at certain times, or they would face a fine system. In its old form, the area was generally used as a fast-pass route for minibus drivers. With the implementation, they had to pass slowly through this point, which initially put them in a difficult situation. However, they managed to solve this problem with a new "check-point" system they developed among themselves during the rehearsal process.

8. What were the critical situations that existed during the rehearsal phase that could **not be implemented permanently**?

As I mentioned in previous questions, reducing the number of pedestrian crossings, changing their locations and the fact that elevated pedestrian crossings could not be implemented permanently were important topics. Instead of these crossings, temporary and less effective solutions such as speed bumps had to be used. This situation was a critical deficiency for us in terms of both pedestrian priority and the integrity of the design.

In addition, the one-way application was not included in the rehearsal process. This decision could not be put into effect in the first phase of the permanent application. However, with the decisions taken later, the area was arranged as one-way and it currently operates in this way. However, since the existing lane widths were designed for two-way traffic, they were too wide for one-way traffic. This brought with it some problems. For example, vehicle parking in and around the square could not be completely prevented due to the wide lanes. This stands out as an important element that limits the ideal use of the area for pedestrians.

9. Were there any specific strategies used to integrate the needs and preferences of children and caregivers into the project in the long term?

Yes, our primary strategy was to correctly identify the needs of the users and shape the design accordingly. For this purpose, we conducted detailed field observations and conducted data collection processes. Our observations in the field showed that there was a clear need to create a safer environment for children. This area is located at the intersection of three schools, and children usually walk to these schools. This makes it a transition point with a heavy pedestrian flow in the morning and afternoon hours. Therefore, a design approach that would allow this user group—especially children and their caregivers—to use the area safely was inevitable. We developed solutions for this need. In addition, making the implementation permanent shows that the project aims for a long-term transformation, not just a short-term intervention.

10. How do you think the inclusion of children and caregivers in the process contributed to the success of the project?

In fact, the data and observations in the Zümrütevler Square book reflect the answer to this question quite well. The data we collected throughout the process and the positive effects of the project enabled the municipality to respond to the complaints it encountered with concrete data. In this respect, it was quite valuable.

In addition, when we said, "We are designing this area for children," we started to receive much more positive feedback from the public. In fact, one day, a father and his child were in the square. At first, the father reacted by saying, "You are doing something ridiculous again." However, at that moment, his child was playing in the square and he turned to his father and said, "I think it turned out very well." With this single sentence, we witnessed the father's attitude completely change. This showed us how powerful children's power to transform both physical spaces and their potential to change adults' perspective on the city is.

In addition, the introduction of the area as an earthquake gathering place increased the functionality of the project and its value in the eyes of the public. In order for the municipality to have more ownership of the project, we invited many international connections and hosted them in Zümrütevler Square. The increased visibility of the project thanks to these connections significantly supported the adoption and acceptance of the project by both the municipality and the neighborhood residents.

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