EXPLANATION STEP BY STEP: BOLOGNA

1 IDENTIFY POTENTIAL AREAS

Potential areas for school streets were suggested by local authorities based on a long, city-wide participatory planning approach focusing on opportunities and problems of each neighbourhood in Bologna.

2 CALCULATE CATCHMENT AREAS & POPULATION

To evaluate the influence of the potential school streets intervention areas, catchment areas (isochrones) are calculated. Therefore, the potential intervention areas, in this case *schools*, are used as starting points. From each school, isochrones are calculated for 5-min walking distance, using the existing pedestrian network. The isochrones are intersected with population data to give an estimation of how many people could benefit from the street redesign.

3A ANALYSE LOCAL ACCESSIBILITY

Streets can be redesigned for several purposes. In the context of school streets, they are often transferred into playgrounds or play areas. To identify which city areas currently have a shortcoming in the availability of playgrounds, local accessibility analyses are conducted. Therefore, the currently existing playgrounds are visualized and the count of playgrounds per isochrone is generated. Catchment areas with low availability of playgrounds, but high population density, thus have a high potential for redesignating the street into a playground.

3B EVALUATE PATH QUALITY & ATTRACTIVENESS

The material and perceived quality of urban streets significantly affect walkability and cycleability. The IAPI index uses several indicators to assess the material quality of a city's path network, expressed as the level of walkability. In Bologna, two new indicators about the perceived comfort and safety of major streets are used based on the "città 30" survey results. Two results are obtained: a "walkability assessment map" showing the level of quality for each street in Bologna and, based on the results of the previous steps, the "potential for improvement" map, where schools' catchment areas are ranked based on the average quality of the local path network.

4 ALLOCATE POTENTIAL SCHOOL STREET CLOSURES

Allocating potential locations for street closures and for low-traffic streets was done using the survey on street improvements in terms of safety and comfort carried out by the City of Bologna. A selection was made based on the overlap with the identified intervention areas. Streets with a key traffic function (arterial roads, main passages, ...) were limited in car capacity (i.e. low-traffic streets), others were entirely closed for cars.

5 COMPARE STREET CLOSURE SCENARIO WITH BAU SCENARIO

First, a business-as-usual scenario (BAU) was created in MATSim, using the input data. This scenario simulates and calibrates the 'normal' situation. Next, the school street closure scenario was developed, using the same input data, but with alterations to the street network, as explained in step 4. Finally, car traffic volumes were compared between the two scenarios and intervention areas with the most significant decreases in car traffic were identified.

6 ANALYSE RESULTS FROM THREE TOOLS

The top 5 school streets catchment areas resulting from the application of each tool were chosen. Selected catchment areas have a higher potential for improvement and may suffer from (a combination of) 1) the absence of playgrounds coupled with high population density; 2) low levels of walkability; or 3) gain notable benefits deriving from street closures. The results of the analyses guide possible interventions regarding the improvement of local services (playgrounds), the redesign of public spaces, and the closure of some streets to cars.

7 DISCUSS RESULTS WITH LOCAL PRACTITIONERS

A discussion is planned with local practitioners to showcase the potential school streets implementations. The aim is to discuss the results and collect feedback to further refine the analysis. The combination of the three tools could provide cities with a comprehensive analysis and support their planning decisions about street schools interventions.

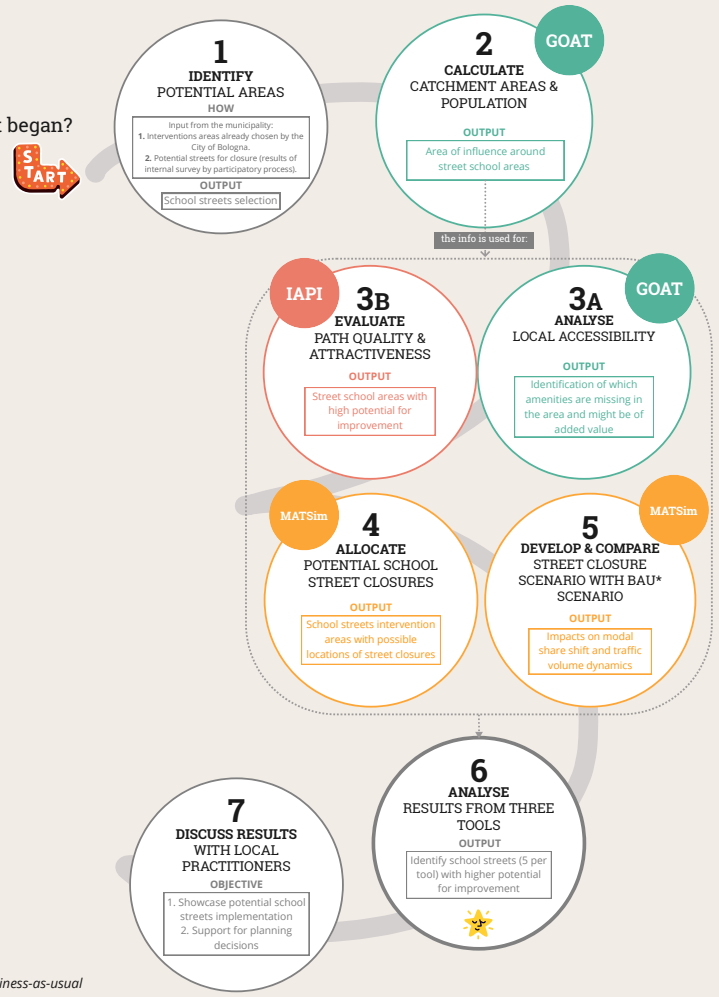
DIGITAL TOOLS FOR PLANNING SCHOOL STREETS

Three-tools application

How GOAT, IAPI & MATSim work together?

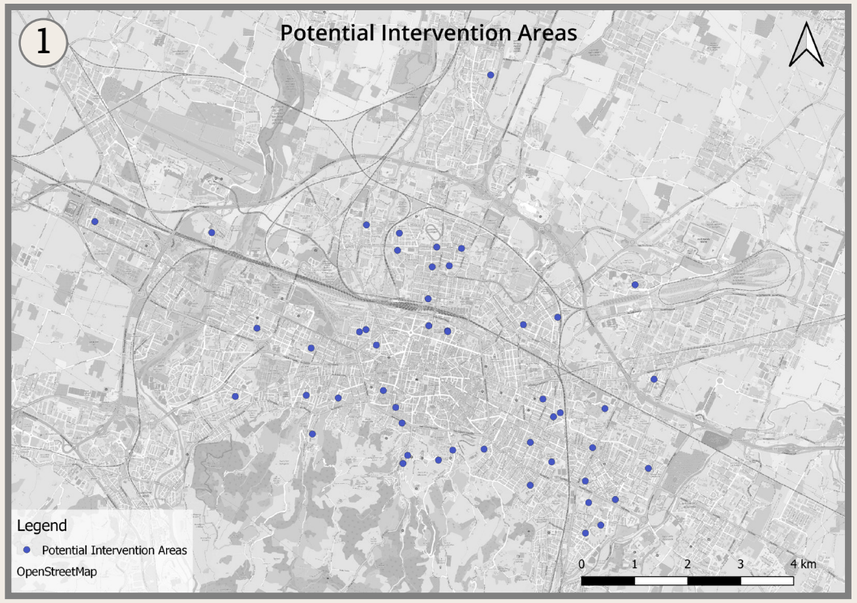
BOLOGNA CASE

How it began?

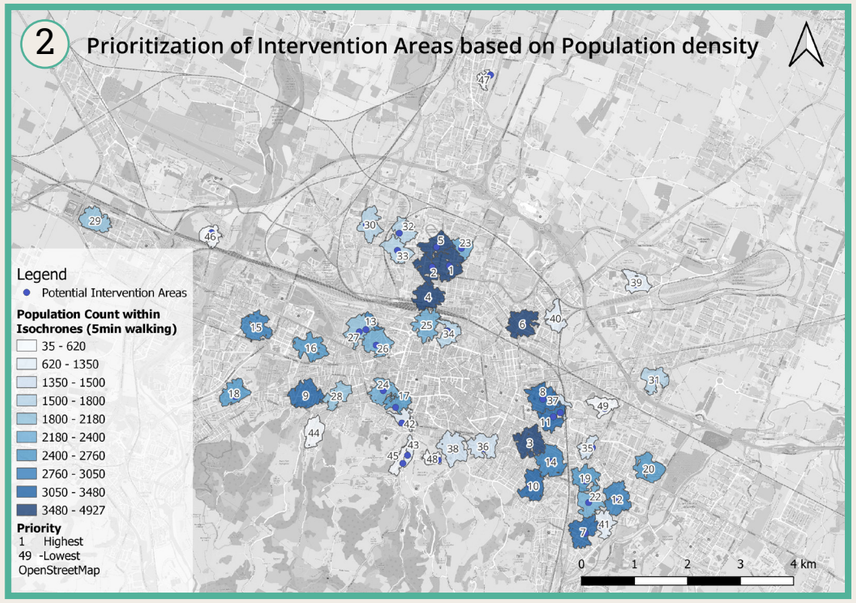


**BAU: business-as-usual*

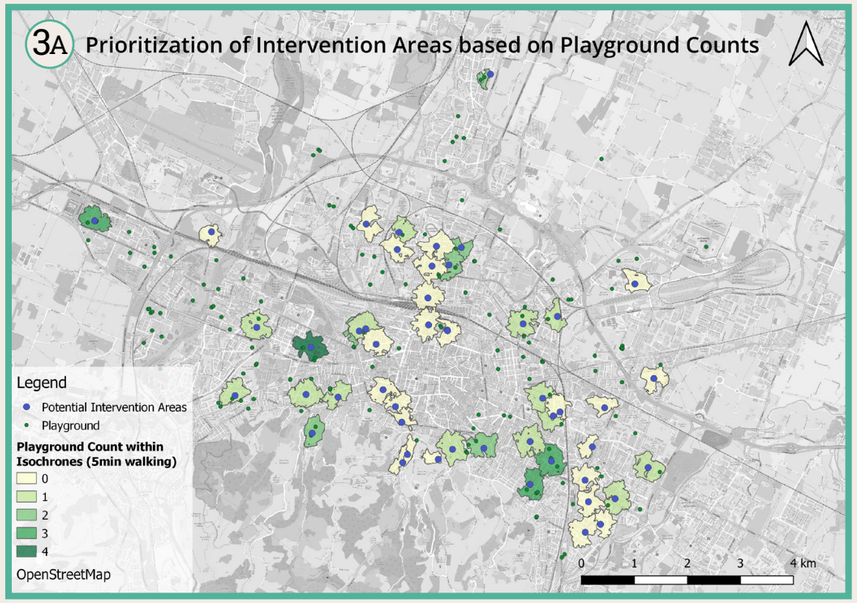
1 Potential Intervention Areas



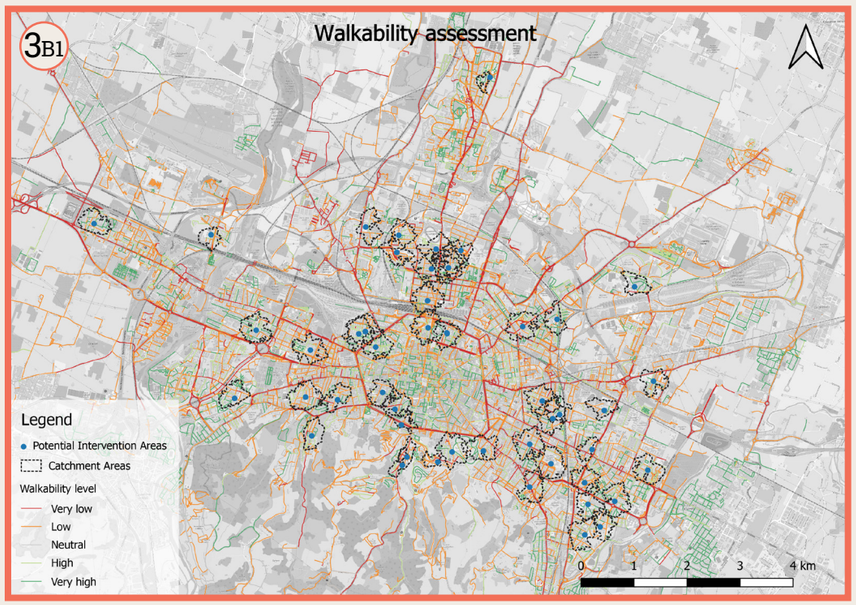
2 Prioritization of Intervention Areas based on Population density



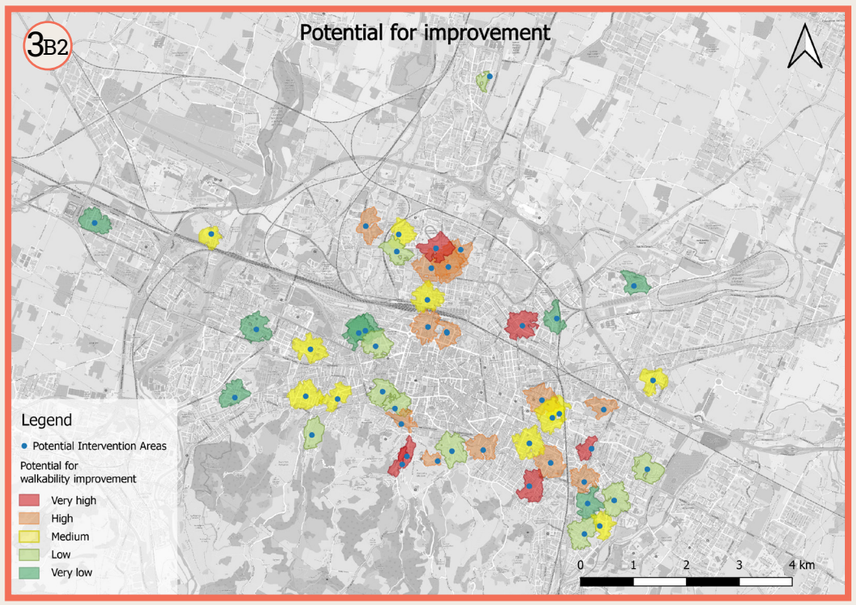
3A Prioritization of Intervention Areas based on Playground Counts



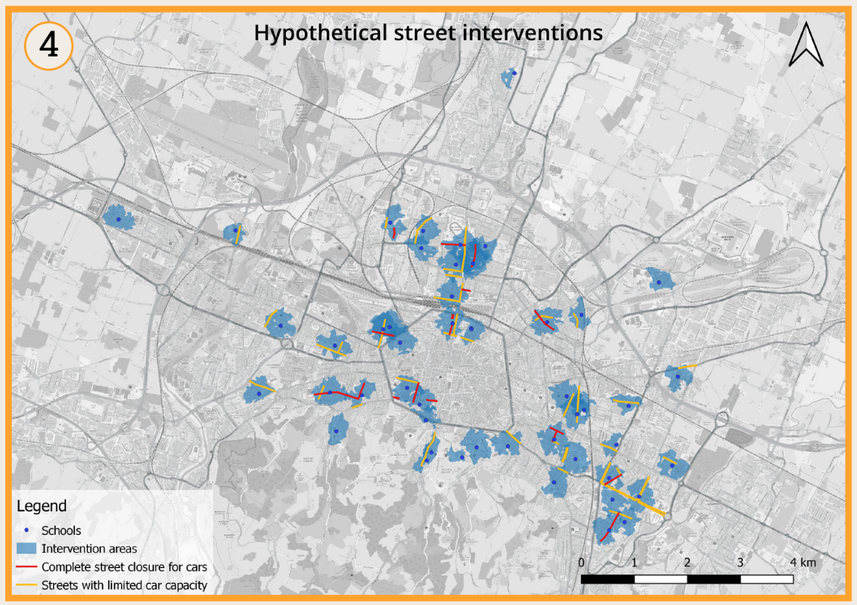
3B1 Walkability assessment



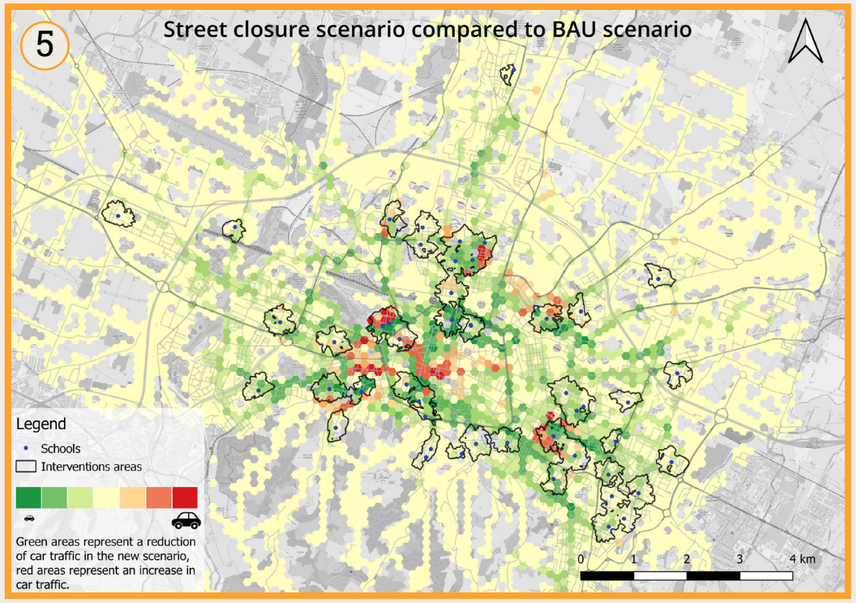
3B2 Potential for improvement



4 Hypothetical street interventions



5 Street closure scenario compared to BAU scenario



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6 Suggested improvements