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## International Research Trends and Methods for Walkability and Their Enlightenment in China

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### Abstract

In recent years, new urbanism design for walkability has been a major focus of city planning. Walkability contributes to the health, well-being, and quality of life of citizens in cities. The link between walkability in cities and the health of citizens' need more indepth research and a comprehensive appraisal of the international research methods for walkability will a good start to build foundation to define research focus and to provide some references for China which is going through a fast urbanization process. This paper discusses the importance of walkability in the new urban development, which has close relationship with public health, urban form and transportation. This paper through literature review, conducts an international comparative study of research methods used for conducting research on walkability. It provides a brief overview of theoretical frameworks that define and measure walkability in different subjects. The method used in this paper includes the following. In order to explore the trend and methodology objectively among related subjects, a database is set up by the software Histcite and CiteSpace, consisting of 813 related papers included in the database of "Web of Science" and 16468 indirect papers referenced by the 813 papers. The citation relationships between these related papers are then analyzed by Histcite and CiteSpace in order to find the connection between different subjects of the papers. The fields of geography, transportation and sociology, and other related research perspectives and contents have been discussed. The result of this review of other countries offers an empirical approach and evidence for a definition of measurable attributes and thresholds for walkable city research in general. It also provides reference with the walkability index and methods for Chinese city planners to meet the China's conditions in future.

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## 1. Background

In China, with the acceleration of urbanization, overspread of cities has gained more gravity. As a result, many cities are currently planning a transition phase from diffused to contracted urban structures. In the past, cities had sparse buildings and high transportation dependency. However, the urban sprawl not only consumed a large amount of farmlands and other natural resources, but also reduced the service efficiency of public facilities, which caused many environmental and social problems. In order to curb urban overspreading, governments have defined rigid growth boundary around the city and have strongly advocated intermodal transportation and compact neighborhoods. The Chinese governance city work conference has proposed the concept of "compact city" and "smart growth" to promote urban development in both inside and outside of some cities [1].

This is also the case in some other countries. The United States, which is the earliest suburbanized country, has experienced urban expansion by virtue of developing suburbs. Subsequently, due to its serious damage inflicted on the environment, economy, social development and so on, the American Planning Association then established the "Smart Growth America" union with other public organizations in 2000 and proposed a new way of developing compact, intensive, and efficient cities. At the same time, it joined the Walker Association in the 21st century together with other 19 other countries including the UK, France, Canada, and Australia, to carry out urban development activities in communities, with discussion of the results at annual general meetings [2].

Facilitating simple physical activities, for example, like walking, has great potential to solve an array of issues in different aspects of the society, from economical to environmental and of course to health. It brings an active lifestyle for all citizens. From the perspective of the society, high walkability of a community equates to high residential density and diversity of travel destination, as a result, the utilization rate of public facilities can be increased [3]. In addition, due to the slower pace of walking, people get more opportunities to communicate with other pedestrians to enhance neighbourhood connections [4]. Some studies have indicated that a high walkability score of an area can raise housing prices [5]. Other researchers believe that walking can effectively reduce obesity and chronic diseases [6].

With the greater dispersion of knowledge through publication and the media, the increased availability of information on different subjects, can make it difficult to read all literatures about the positive effects of walkability. An effective way to solve this problem is to use modern literature analysis software as a supplementary tool to objectively assess the development trend. This paper uses the software Histcite and visualization software platform Citespace to grasp development trend and hotspots related to the research through all related literatures in recent years from the "web of science" database.

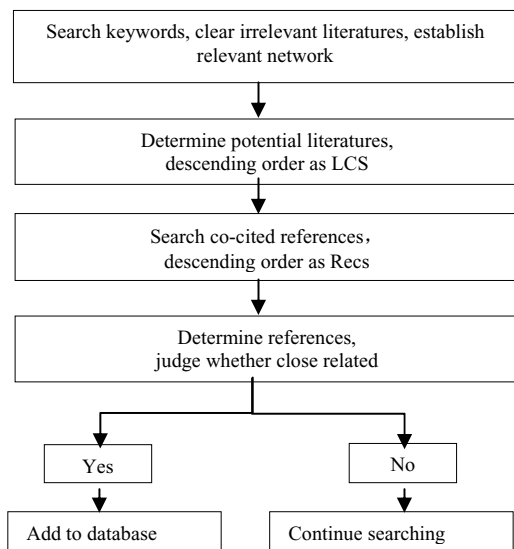


Fig 1. The process of setting database

## 2. Database and Methods:

This paper draws upon the quotation analysis software on the basis of traditional literature reading. In the database Web of Science, "walkability" is set as the keyword in the search of all literatures from 1994 to 2016. 875 relevant works were retrieved, but not all are relevant to cities.

With the help of the analysis software—Histcite, directly relevant literatures have been determined as potential literatures by two major indicators. One is the frequency of words in the title, and the other is the frequency of citation. After analyzing co-cited references, potential texts are sorted out in descending order based on local citation score (LCS). In the next stage, according to literatures with high local citation score and the references from all relevant literatures, the number of indirect

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