

# Equity mapping

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Equity mapping can reveal how patterns of exposure to environmental harm and access to environmental benefits are distributed across urban landscapes. Using geographic information systems (GIS), researchers in the 1990s began to investigate issues of environmental equity within United States' cities. Researchers wanted to see whether relationships existed between the location of environmental benefits, harms and natural hazards, and the social and demographic characteristics of urban populations (ie 'environmental justice'). What they found is that socio-economically vulnerable populations - usually people of colour - bore a disproportionately high burden of environmental harm. Why do such patterns exist?

People of colour and the poor typically cannot afford to live in parts of the city with good environmental quality. Because they lack financial resources and political power, corporations and governments have targeted these communities for undesirable land uses like hazardous waste incinerators, toxic chemical plants and radioactive waste facilities, without their knowledge or consent. Over the past two decades, detailed empirical research has proven that in the US, people of colour and the poor are more vulnerable to natural hazards (eg living on flood-prone land, or in poorly constructed or substandard housing. Hurricane Katrina in New Orleans showed this clearly. Researchers have also found that freeways are often built through impoverished neighbourhoods; and vulnerable communities are restricted to parts of the city with the worst air quality and to neighborhoods lacking access to good quality fruit, vegetables and meat.

So what is equity? The concept of equity basically means that society considers a particular situation to be fair and reasonable (eg that all people have access to fresh drinking water). Equity mapping takes into account four basic expressions of equity (a) equitable distribution - where all members of society have the same access to environmental benefits and same exposure to environmental harms; (b) compensatory equity - where benefits are redistributed to those most in need and harms are redirected, to offset inequalities created by class, race or gender differences; (c) demand distribution - where the most vocal members of the community are given the most resources and (d) market-based distribution - where people who can afford to pay for goods or services get the best access to those goods or services. In a market economy, access to the best food, cleanest water and the healthiest jobs is usually financially determined.

What equity mapping can reveal is whether or not resource managers like planners should intervene to redistribute environmental risks, harms or benefits more fairly among the broader community. Let us take parks as an example. Some neighbourhoods have a severe lack of parks and green space. People living in certain neighbourhoods may also encounter barriers to park access (eg freeways or railway lines) absent in other neighbourhoods. Equity mapping enables us to see who enjoys access to parks and how public funding for parks is distributed within cities. Recent studies have revealed that neighbourhoods with abundant parks are predominantly wealthy and also receive more park funding. This raises serious concerns about the effectiveness of urban planning, since parks are supposed to be a public good available to everyone.

Recognising that planners seem unable to fix these problems, some community groups are now performing their own equity mapping. Groups of women with breast cancer for example, have come together to map cancer-causing land uses within their communities to see if there is a relationship between the incidence of breast cancer and the location of certain land uses. Environmental equity also has global dimensions. Rich nations from the industrialised North are increasingly sending hazardous waste such as old computer components or used batteries to poorer developing countries in the South for recycling or disposal. Some non-government organizations have begun to use equity mapping to challenge this practice.

Thus, equity mapping enables people to generate interactive maps that provide an objective basis for challenging the inequities of existing development.