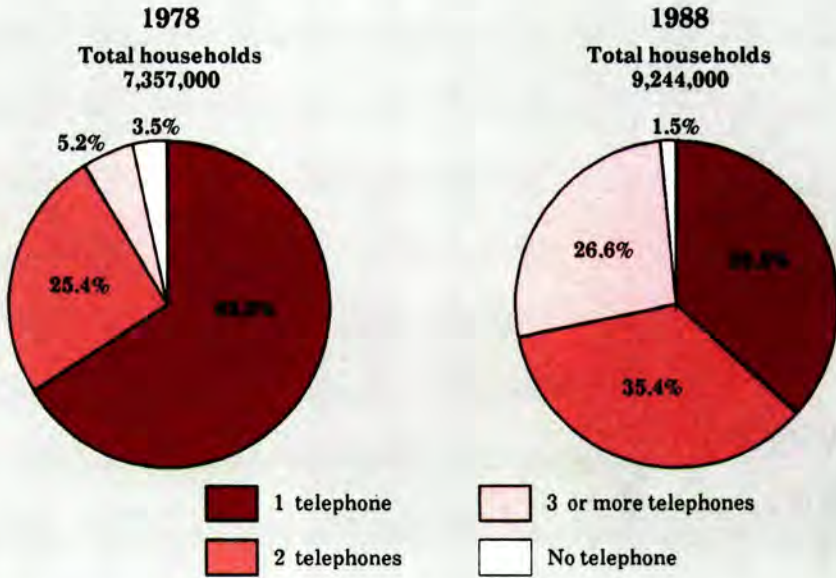


Chart 14.1

Households with and without telephones

country's international carrier, connecting domestic and overseas networks.

14.1.2 Telecommunications networks

New technologies are gradually transforming Canada's telecommunications infrastructure. Canada has been a leader in replacing analogue communications, in which signals travel in continuous waves, with digital communications, in which signals are transmitted in discrete pulses. Because the digital mode uses computer language in its signals, it is able to carry more information than the analogue mode. It is also less susceptible to interference. Using digital and computer technologies in telecommunications has opened the way for vast interconnectable networks and myriad new applications.

In many of Canada's carrier networks, especially where traffic is heaviest, new fibre-optic cables are replacing traditional copper cables. The new cables are able to carry more information, faster, with less signal loss, than the copper cables. They are also better adapted to certain applications, such as underwater lines, because of their high capacity at low cable diameters. Both Telecom Canada and CNCP Telecommunications are in the process of laying fibre-optic trunk-lines

which will be the backbone of two competing trans-continental networks in the 1990s, supplementary to their existing microwave radio networks.

Terrestrial systems. Three nation-spanning microwave networks form the backbone of Canada's telecommunications networks. Two of them are owned by Telecom Canada, and the third by CNCP Telecommunications. These networks consist of microwave stations spaced about 50 km apart, which relay radio signals, and amplify them along the way to compensate for normal signal loss. In general, a microwave channel can carry more than 1,200 telegraph, data or telephone signals or one television signal. The amount of traffic in a given area determines the amount of the microwave spectrum used.

14.1.3 Domestic communications satellite system

Canada's satellites serve as elevated microwave towers locked into geostationary orbit about 35 900 km above the equator. Signals beamed up to them can be relayed anywhere in Canada. In particular, they bring reliable communications to the remote corners of our country, where it has not been economical to establish a terrestrial infrastructure.