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Overview of Presentation

Peak oil, and the ensuing global decline in oil supplies, will adversely affect automobile-dependent personal transport systems. This places users at risk if they are unable to access their activities without oil consumption. This research develops a new measure of oil vulnerability, combining spatial data of vehicle fuel use with a novel transport energy-accessibility metric, the Minimum Energy Transport Activity Access characterisation (METAA), overcoming many of the limitations seen in previous studies. The Vulnerability to Oil: Income, Land-Use and Accessibility (VOILA) assessment identifies vulnerable areas as those where residents might lose access to activities during oil price rises as they can neither afford to spend more on fuel nor adapt their travel patterns to reduce consumption. This new metric allows planners to analyse where, how and why residents are vulnerable. Assessing the oil vulnerability of Christchurch, New Zealand, indicated that although the majority of areas are adaptable, residents in most areas are already spending over 10% of their income on transport, leaving the less adaptable areas vulnerable. A comparative mapping exercise highlighted the distribution of vulnerability and identified potential mitigation strategies. The research has important implications for urban and transport planning.