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Changes in accessibility in the Meseta Purépecha region of Michoacán, Mexico: 1940–2000

Paul Marr [a,*], Christopher Sutton [b,1]

[a] Department of Geography, Shippensburg University, 1871 Old Main Drive, Shippensburg, PA 17257, USA
[b] Department of Geography, Western Illinois University, 1 University Circle, Macomb, IL 61455-1390, USA

Abstract

This paper examines changes in town accessibility on the Meseta Purépecha of Michoacán, Mexico before and after road construction beginning in the 1940s. In the mid-20th century researchers noted the presence of an important mountain–lake trade connection, which by 2000 had been significantly diminished. Between 1940 and 2000 there was an increase in accessibility of the area east of Lake Pátzcuaro, while there were more modest increases seen in the western section of the meseta. Road improvements and realignments have led to substantial changes in the theoretical network associations among the towns, and while towns in the region have become better connected externally, improvements in accessibility among towns within the region were unevenly distributed.

Keywords: Transportation changes; Michoacán; Mexico; Graph analysis

1. Introduction

There is a large and growing body of literature which calls into question the idea that rural transportation infrastructure improvements automatically stimulate rural economic development (For example, see Kilkenny, 1998a,b; Fox and Porca, 2001; Njenga and Davis, 2003). The weight of the empirical evidence suggests that past attempts to reduce transportation costs (improve accessibility) across diffuse rural populations may be a key component in maintaining rural poverty inasmuch as the costs of such infrastructural improvements are "…a leading consumer of public investment resources" (Njenga and Davis, 2003, p. 220). This is not to say that all rural transportation investment is by its very nature counterproductive, but rather that rural transportation development is most efficient and has the greatest impacts when it is targeted to address a specific need (as in the case of rural Paraná, Brazil in Wright et al., 1983). Conversely, when rural transportation development fails to target a specific need, or in this case fails to duplicate specific important routes, the negative consequences can be equally great.

Keeling (2002) noted that while Mexico has invested heavily in toll-road construction, basic accessibility and mobility issues have received little attention. Further, he argues that national transportation policies throughout Latin America treat areas as both spatially uniform and socio-economically homogenous. As such, planners have failed to connect accessibility (having the physical infrastructure for movement available) with mobility (the ability for people to actually utilize that infrastructure). Keeling states that "…transportation is a necessary, but not sufficient, component of economic development (2000, p. 80)." Further, road improvements and the concomitant increase in accessibility they create often entice more people to become producers, leading to increased local resource exploitation (Newcomb and Rechel, 1964). Such is the case in the Meseta Purépecha region, which occupies an area of approximately 4500 km^2 in northwestern Michoacán, Mexico, centered on the mountain and upland area west of Lake Pátzcuaro (Fig. 1). Throughout much of its history

* Corresponding author. Tel.: +1 717 477 1656; fax: +1 717 477 4029.
E-mail addresses: pgmarr@ship.edu (P. Marr), CJ-Sutton1@wiu.edu (C. Sutton).
[1] Tel.: +1 309 298 1648; fax: +1 309 298 3003.

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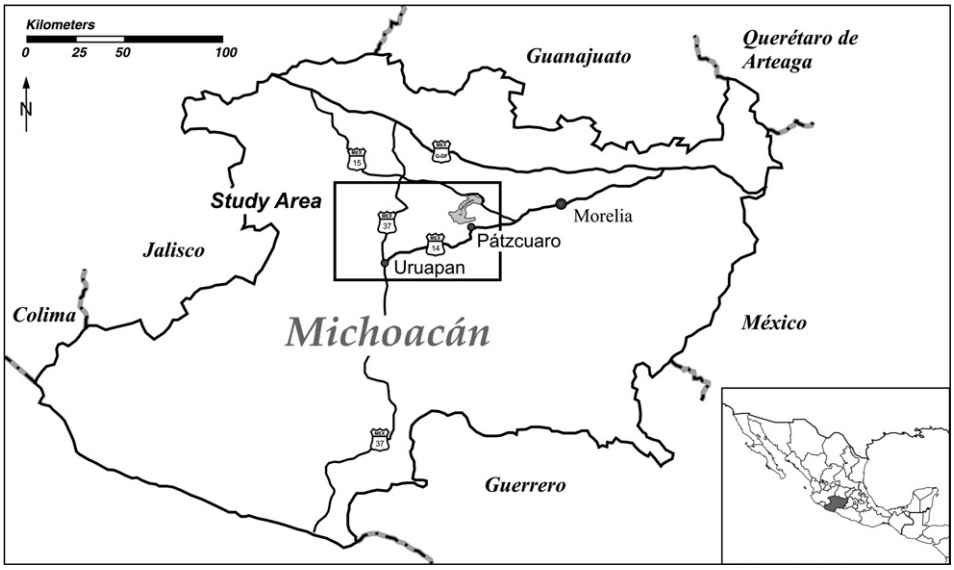

Fig. 1. Michoacán, Mexico and the Meseta Purépecha study area.

the region was served by long established trade routes used primarily by *arrieros* (professional traders) hauling goods with burros or horses (West, 1948). As pack animals were the primary modes of transport, these trade routes often favored directness over more level and circuitous routes.

Isolated by difficult topography and a different language, the towns on the Meseta Purépecha specialized in the production of a few handicrafts made from locally available material and developed a rather complex internal network of burro paths and walking trails. The most important of these internal routes was an east–west path connecting the towns of the mountains to those surrounding Lake Pátzcuaro (West, 1948; Stanislawski, 1950; Williams, 2002). Along this path the wooden goods produced in the highlands could be brought down to the market town of Erongarícuaro and traded for fish and other products found near the lake. There were fewer external routes, the most important being the north–south route that linked the region with the coast and central Mexico. Settlements along important routes became regionally significant trade and craft centers, and the distribution of population closely mirrored these trade routes. In the 1970s paved roads were extended into the region, reconfiguring the previously existing transportation network and realigning previously existing trade patterns.

In this study we examine changes in relative accessibility among forty towns in the Purépecha region between 1940 and 2000. The study area extends from the meseta proper (the mountainous region west of Lake Pátzcuaro), to the area surrounding Lake Pátzcuaro and the northern portion of the Balsas River escarpment, and encompasses the modern and historic trade routes that formed the region's most important internal connections. We have limited our investigation to the surface transportation network (e.g., roads and trails) which would have been used most often during each of the time periods: roads (both paved and unpaved) and pack trails in 1940 (Fig. 2a), and primary and secondary paved roads in 2000 (Fig. 2b). Town accessibility for the two time periods was estimated using graph analysis (both total and valued), while interaction among the towns was estimated using principal component analysis. Examining the changes in accessibility as the surface transportation network was upgraded and realigned is an important step in understanding how interaction among towns within the region has also changed. This study also sheds light on the dynamic nature of the region's internal isolation and accessibility. Whereas regional transportation studies have often focused on either determining and prioritizing regional transport needs (e.g., Sarkar and Ghosh, 2000) or the method of economic appraisals of completed projects (e.g. Kerali, 2003), our research focuses on the effects that infrastructural upgrades have had on the interaction among places within a region.

2. Background

The towns on the meseta fall into three basic categories. The *peripheral urban centers* (e.g. Uruapan, Pátzcuaro, Zamora) are typical of many other commercial/industrial towns in Mexico which serve national and/or international markets (Fig. 3). Regional *market towns* are found both in the western mountains (e.g. Paracho, Cherán) and around the lake (e.g. Quiroga, Santa Fe) and are characterized by a mixture of commercial, industrial, and farming economies geared toward both the mestizo and Purépechan population. They differ from the peripheral urban centers in that their economies are tied closely to the local farming and craft communities. Finally there are the small *farming/craft towns* whose economies are predominantly agricultural and whose populations are overwhelmingly native Purépechan. Populations in these towns range from a few dozen (ranchos) to a few thousand (pueblos). Some small scale