Proposal for a new metro stop in Medellín

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Fig. 1. Municipalities within the Aburrá Valley.

Of the ten municipalities comprising the metropolitan area of the Aburrá Valley surrounding Medellín, four do not have a metro stop. Recently, government funding has become available in order to build a new metro station in one of these municipalities.

This brief examines the factors affecting suitable locations for the new stop, and recommends that it be situated in the **Barbosa** municipality, connected to Niquía in the Bello municipality at the northern end of the metro A-line, as indicated in Fig. 2.

Municipality demographics. There are four municipalities with no metro stops: Barbosa, Caldas, Copacabana and Girardota. Apart fom Caldas, they are all located in series in the northeastern section of the Aburrá valley (see Fig. 1). Moving northeast from Copacabana, these municipalities become increasingly more rural. Barbosa and Copacabana had the lowest wages and employment rates of all municipalities in 2017.

Commute patterns. None of these four municipalities have high commute rates into the urban centre Medellín. Surprisingly, there is much higher commute volume from Barbosa and Copacabana into the smaller urban centre Bello. The second-largest urbanised zone in the valley, Bello is also the closest point of contact with the Medellín metro system for these northeastern municipalities.

Despite this, mobility model data based on population and employment rates predicts that there should be only moderate commuter numbers from Barbosa and Copacabana into Bello, with much larger numbers predicted to travel from these locations into Medellín.

This suggests that the additional amenity of metro access contributes to many more than the predicted number of commutes from Barbosa and Copacabana to Bello, indicating that these two municipalities could both benefit from connection to the metro network.

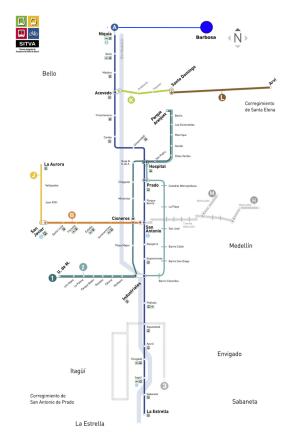


Fig. 2. The Medellín metro with the proposed new stop at Barbosa.

Implications. The proposed location for the new station in Barbosa's urban comuna, connected to Niquía station via either an extension to the A-line or a separate new line, is based on increasing the mobility and employment opportunities for Barbosa. It will obviate the need to drive for 50 minutes to get to Bello, increasing accessibility for those who do not own cars, as well as providing a direct connection to the metro network that many residents currently use.

Due to lengthy driving times to Barbosa, residents from Copacabana and Girardota would likely still need to drive to Bello, although commute times are expected to fall due to the reduction in through-traffic from Barbosa.

The introduction of the new station may introduce greater commuter volume into the network travelling south from Niquía, but the commute patterns suggest that many commuters from Barbosa are already accessing the metro from Bello. Therefore the increase in the number of metro users is not expected to pose a problem.

(1) Piovani, D., Arcaute, E., Uchoa, G., Wilson, A., Batty, M. (2018). Measuring Accessibility using Gravity and Radiation Models. *Royal Society Open Science*, 5(9): 171668.