

A topological data analysis approach to high-school and first level university student interregional mobility

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Abstract. Since the economic crisis of 2008, university enrolments in southern regions of Italy dramatically decreased. On the other hand, in 2012 an increase in the enrolments in northern and central Italian regions has been registered, partially due to students' migration from southern regions. In fact, territorial inequalities in Italy are strictly related to the well-known North-South divide and student mobility trajectories are one of the most relevant manifestations of the division.

This paper describes the Italian student mobility from high-school to job placement and its impact on the Italian North-South divide and in the University system by exploring mobility dynamic over time and space simultaneously. Tools coming from Topological Data Analysis (TDA) are exploited for describing and quantifying the differences in the movers' paths around Italy. The coordinates of the province of residence of students that in 2008 enrolled in a University of five different macro territorial areas from the year of the diploma until 2016 are used as input variables for the analysis. The final result is a quantitative measure of the mobility based on the area of the Alpha Shape, a powerful tool that will give information about movements and dispersions associated to this phenomenon.