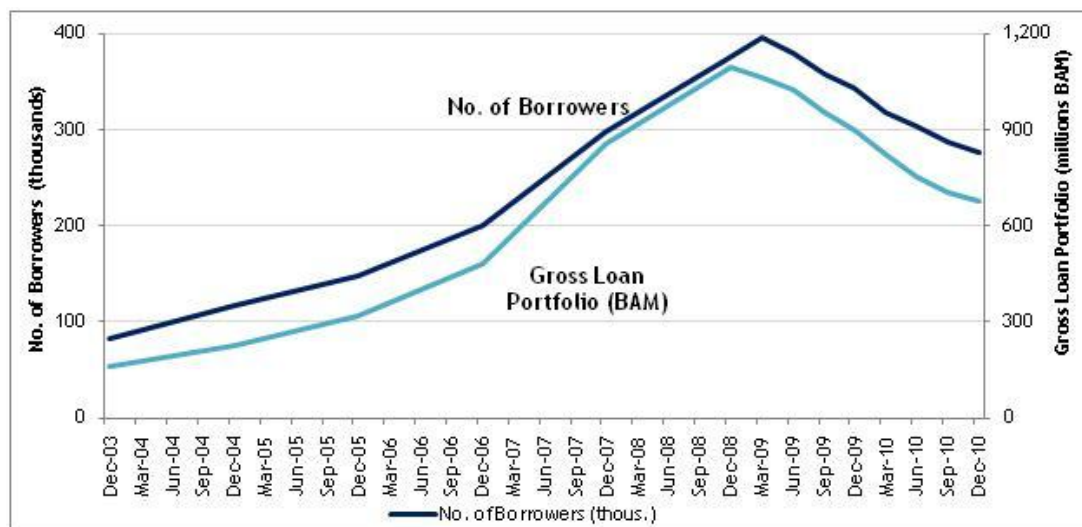


MIX Microfinance World: Geographical concentration of lending in Bosnia and Herzegovina



[Bosnia and Herzegovina](#), one of the largest markets in [Eastern Europe and Central Asia](#), experienced rapid growth from 2006 to 2008, but crashed in 2009 as a result of high indebtedness among clients and the adverse effects of the global financial crisis. By December 2010, the client base of Bosnian MFIs was reduced back to 2006 levels (see Figure 1). The rapid growth once experienced by the sector was followed by near double digit [portfolio at risk](#) (over 30 days) results by the end of 2009.

Figure 1: Trends in Outreach and Scale in Bosnia and Herzegovina, 2003 - 2010



In MIX's [Data Brief 5: Is Microfinance Growing Too Fast](#), we demonstrated that there is little general relationship between high growth rates and portfolio quality. The exceptions to this finding occur when MFIs grow primarily locally, rather than through geographic diversification (adding more borrowers per branch, rather than opening branches in new areas) or where the sector has very high penetration rates (total borrowers as a percentage of total population exceeds 10 percent).

Which of these factors played a role in the crisis in Bosnia and Herzegovina (BiH)? In 2008, the sector had a penetration rate of 15 percent which doubled from 7.8 percent in 2006. Only [Bangladesh had a higher penetration rate, over 20 percent](#). While high penetration rates for this small country of 3.8 million people may have been a harbinger of unsustainable practices, we can also take advantage of detailed data on the subregional distribution of services to assess if greater geographic diversification could have prevented the decline in portfolio quality.

MFIs in Bosnia have disclosed geographic breakouts of their portfolio, by city, in annual audits since the early 2000s. MIX consolidated these data by subregions to analyze patterns of geographic concentration. A sample disclosure is posted below (from [the audits of Prizma](#)):

Notes to the financial statements (continued)

15 Loans and advances to customers (continued)

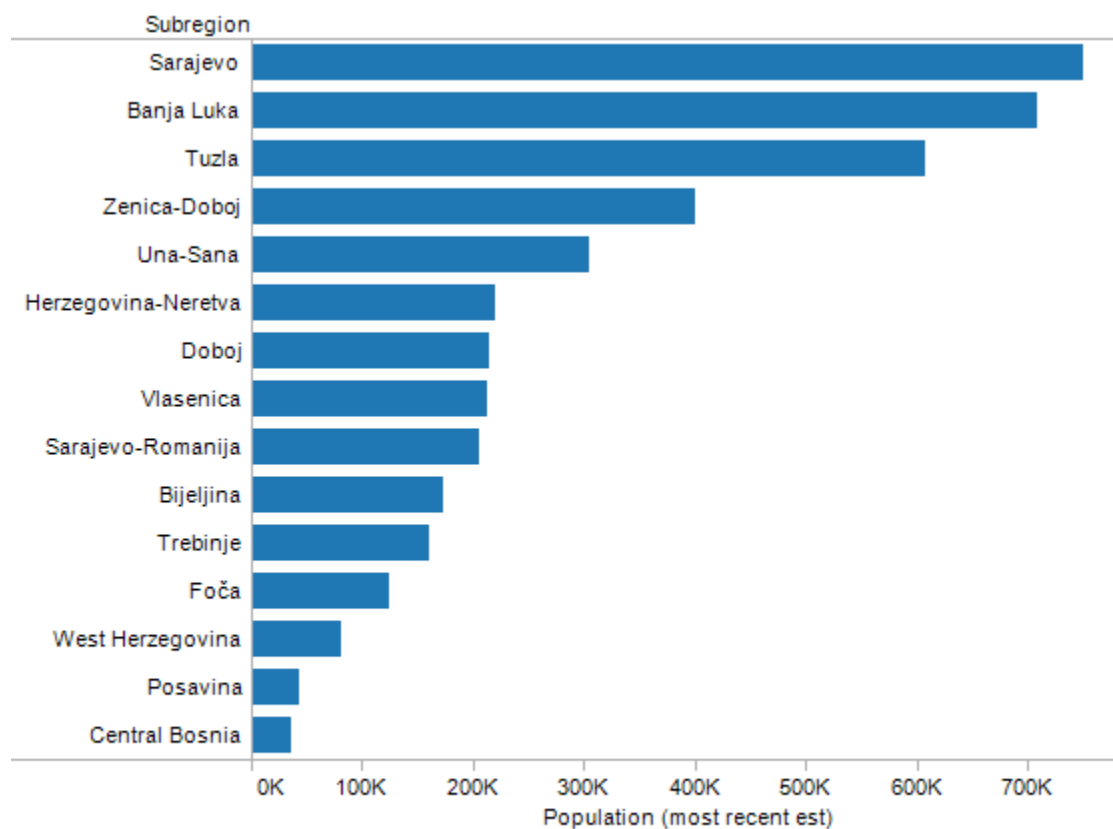
c) Geographic analysis

| | 2009 BAM'000 | 2008 BAM'000 |
|------------|-----------------|-----------------|
| Bihac | 16,033 | 14,880 |
| Zenica | 17,929 | 14,555 |
| Sarajevo | 15,666 | 13,207 |
| Mostar | 10,303 | 8,578 |
| Banja Luka | 12,667 | 11,185 |
| Bijeljina | 572 | - |
| Tuzla | 11,904 | 10,635 |

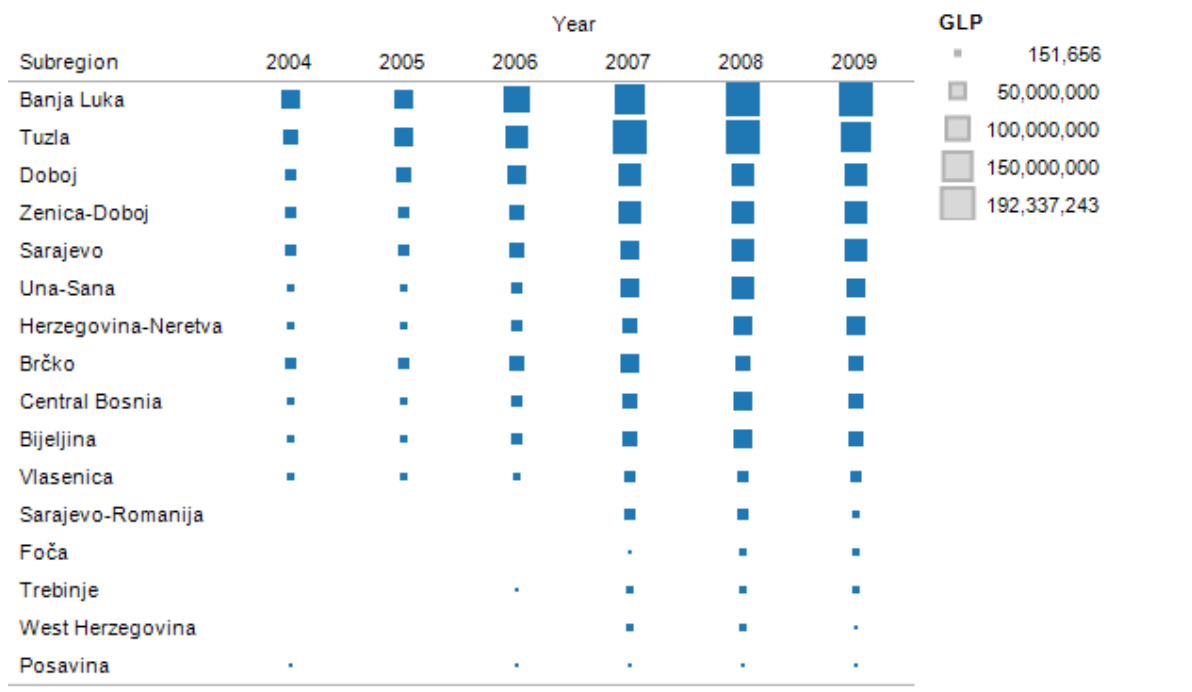
We compiled this data on geographic breakout from audits for 2004 to 2009 and analyzed it to see what it can tell (or could have told) us about the evolution of the crisis in Bosnia. The raw data is posted to a Google Fusion table [here](#) for anyone that would like to dig deeper as well.

A bit about Bosnia and Herzegovina

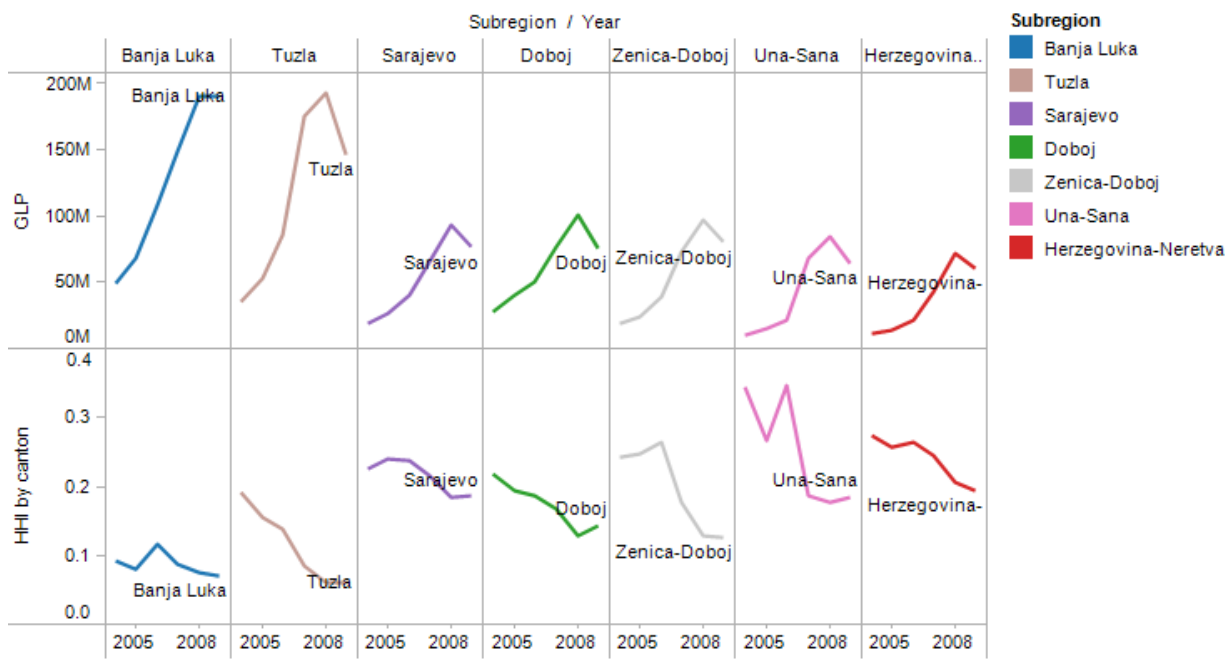
Bosnia and Herzegovina is divided [into two governing entities](#) - the Federation of Bosnia and Herzegovina and Republika Srpska, while the Brčko District is administered by both. The Federation is subdivided into ten cantons, while Republika Srpska consist of seven regions. For the purpose of the analysis below, we group the cantons, regions and the Brčko District into one category of "subregions" of Bosnia and Herzegovina. The figure below shows the subregions in the country according to [population size](#):



Data on the geographical distribution of the lending shows that MFIs operate in most of the subregions of the country, but the concentration in two of them - Banja Luka and Tuzla - has increased disproportionately to the others since 2005 (see Figure 4). In 2007, the year of highest growth for Bosnian MFIs, these two subregions, whose populations make up 35 percent of the total, captured 39 percent of MFI portfolios. Once the crisis hit in 2008, MFI portfolios contracted, with the biggest decrease (46 mln. BAM or about 30 mln USD) occurring in Tuzla. In contrast, Banja Luka was the only subregion that witnessed a slight increase in portfolio over the previous year. A deeper look at market concentration helps explain this occurrence.

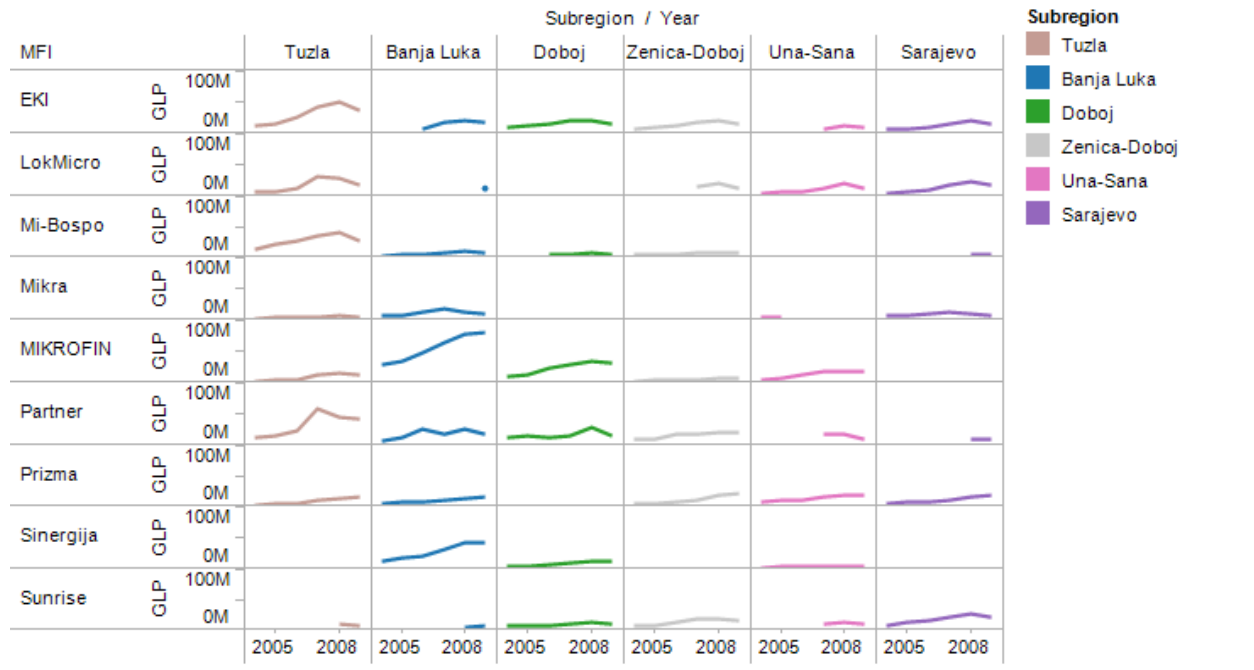


The [Herfindahl-Hirschman Index \(HHI\)](#) is an indicator of competition among firms in an industry. HHI ranges from 0 percent, indicating extremely high competition, to 100 percent, indicating a monopoly (see [note](#) for more). In BiH, in 2007 there were four subregions - Foča, Posavina, Sarajevo-Romania and West Herzegovina - with HHI levels of 100 percent. In each, only one MFI - MIKROFIN - operated. These subregions are relatively small in population, with about 12 percent of the population, but they captured only 3 percent of MFI loan portfolios. In contrast, some of the largest subregions by both population and portfolio allocation had very low HHI levels, indicating very high competition among MFIs (see Figure 5).



The subregions with largest portfolios - Tuzla and Banja Luka - also had the highest market concentration (lowest HHI). However, while concentration in Banja Luka has been high but relatively constant since 2004, Tuzla saw a large increase in concentration in 2007-2008, the year of highest growth for the Bosnian microfinance industry. This may explain why the portfolio in Banja Luka remained much more stable in 2009 than in Tuzla. Una-Sana and Zenica Doboј had similar sharp increases in concentration in 2007, suggesting that much of the growth in the country occurred in already-served areas, which could have contributed to cross-indebtedness in the market.

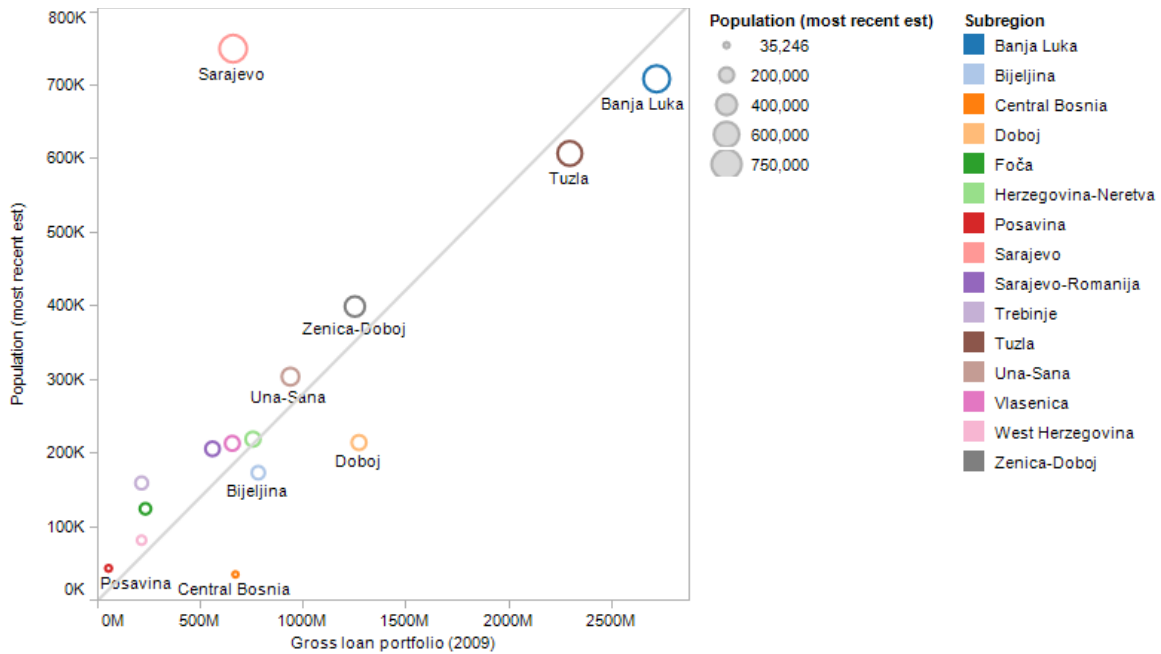
In addition, the level of exposure and competition faced by each MFI in each subregion is important to observe. As Figure 6 shows, MIKROFIN appears to be the clearly dominant MFI in Banja Luka, and they experienced much lower levels of [portfolio contraction](#) and [level of risk](#) compared to its peers. In contrast, in Tuzla four large MFIs (EKI, LokMicro, Mi-Bospo and Partner) had similar exposures and each saw portfolio contraction in this subregion in 2008.



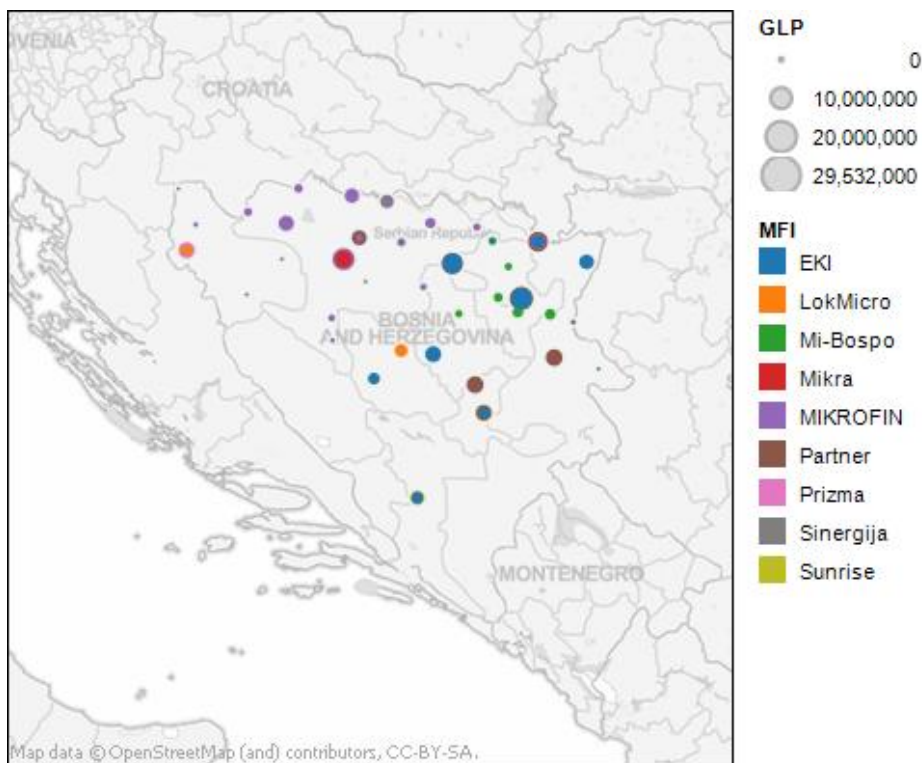
What can geographic data tell us?

Can data on the geographic concentration of microlending services tell us anything about the future health of microfinance sectors? In the case of BiH, the data seems to indicate that the most populous subregions captured the largest allocation of portfolio and had the highest competition, as the majority of MFIs increased their presence in these areas. Could MFIs have done anything differently to avoid overcrowding of the market and cross-indebtedness? Certainly MFIs wishing to diversify their geographic base could have entered more remote and expensive-to-serve areas such as West Herzegovina. However, the smaller markets in these sub-regions could not have generated the exceptional growth rates observed in 2007. Therefore, the sharp increase in competition in all the large sub-regions in 2007 should have been an indication that the market of the country as a whole is reaching a saturation point.

In BiH there was high competition in many subregions and little room for growth due to the small overall market. However, data on the concentration of microlending by subregions can reveal imbalances within the market that a simple country-wide measure of penetration cannot. **Figure 7** demonstrates the relationship between the portfolio and population by subregion. In the case of BiH, most subregions are very close or on the best-fit line, i.e. the volume of lending per subregion is close to what would be expected given the population size. Sarajevo is the only clear outlier - the volume of lending to the capital city is much smaller than what would be expected given the population. Likely reasons are the many competitor banks operating in and around the city of Sarajevo or perhaps lower poverty levels in this economic hub.



Similar analysis can be done for other countries where there are large subregional differences. For example, in the case of India, would Andhra Pradesh have been flagged as at-risk earlier on with this type of analysis? We can expand further with sub-regional data on risk levels, clients and population below the poverty line. We will look to apply the lessons learned from this subregional analysis to other markets in the future, but in the meantime welcome others to [look at the data](#) and see [what else it can reveal](#), including tracking growth by location:



Special thanks to Shumei Chen for help gathering and analyzing data.

Fn1: Data on population is primarily from Wikipedia. Population for many subregions was calculated by summing the populations of the different municipalities that compose them. For several municipalities in Republika Srpska population figures only exist from 1991, pre-conflict, and thus may be substantially off from current levels.

Fn2: HHI is calculated as the sum of the squares of the market share of the 50 largest firms (or all firms if less than 50). Market share of Bosnian MFIs in each subregion is calculated by dividing the portfolio amount of each MFI in a subregion by the total portfolio for this subregion. Market share (squared) is available in the linked spreadsheet for those interested.