

Religious School Enrollment in Pakistan

A Look at the Data

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Abstract

Bold assertions have been made in policy reports and popular articles on the *high* and *increasing* enrollment in Pakistani religious schools, commonly known as madrassas. Given the importance placed on the subject by policy makers in Pakistan and those internationally, it is troubling that none of the reports and articles reviewed based their analysis on publicly available data or established statistical methodologies. This paper uses published data sources and a census of schooling choice to show that existing estimates are inflated by an order of magnitude. Madrassas account for less than 1 percent of all enrollment in the country and there is no evidence of a dramatic increase in recent years. The educational landscape in Pakistan *has* changed substantially in the last decade, but this is due to an explosion in private schools, an important fact that has been left out of the debate on Pakistani education. Moreover, when we look at school choice, we find that no one explanation fits the data. While most existing theories of madrassa enrollment are based on household attributes (for instance, a preference for religious schooling or the household's access to other schooling options) the data shows that among households with at least one child enrolled in a madrassa, 75 percent send their second (and/or third) child to a public or private school or both. Widely promoted theories simply do not explain this substantial variation within households.

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1. Introduction

In recent years, policy makers have expressed growing concern about Pakistan's religious schools, commonly known as madrassas.² These concerns have been fueled considerably by reports and articles in the popular press that madrassa enrollment is *high* and *increasing*. The "rise" is generally attributed to either an increasing preference for religious schooling among families or the lack of other viable schooling options for the household (Burki 2001, Singer 2001). Yet while these theories and the underlying claim that enrollment is high and increasing have widespread currency, none of the reports and articles reviewed base their analysis on publicly available data-sources or established statistical methodologies. Given the importance placed on the subject by policy makers in Pakistan and those internationally, it is troubling that the basic theories and underlying facts remain unconfirmed.

This paper uses established data sources as well as data collected by the authors for a broader study on education enrollment in Pakistan to examine the size and importance of the religious education sector in Pakistan. Methodologically, this paper analyzes madrassa enrollment in a school choice framework well known to empirical economists dealing with issues of poverty and school quality in developing countries. This approach allows us to evaluate various popularly proposed theories of how madrassas fit in the overall educational decision of households.

Our findings differ by an order of magnitude from those reported by and in the media. The madrassa sector is small compared to educational options such as public and private schooling accounting for less than one percent of overall enrollment in the country. Even in the districts that border Afghanistan where madrassa enrollment is the highest in the country, it is less than 7.5 percent of all enrolled children. Furthermore, we find no evidence for a dramatic increase in madrassa enrollment in recent years. The share of madrassas in total enrollment declined before 1975 and has increased slowly since then. Since 2001 total enrollment in madrassas remained constant in some districts and increased in others. When we look at school choice, explanations for madrassa enrollment based on household attributes such as religiosity appear inadequate. Even among the less than 1 percent of families who have children enrolled in madrassas, more than 75 percent send their other children to private and public schools.

The only publicly available sources of data to document patterns of enrollment and available educational options for Pakistani families are household-based surveys. These are the

² See for example President Bush's remarks on June 24, 2003, President Musharraf's remarks on February 2002, Colin Powell's on March 11, 2004, Hillary Clinton on February 24, 2004 and the 9-11 Commission Report.

official 1998 Census of Population (Government of Pakistan)³, the 1991, 1998, and 2001 rounds of the Pakistan Integrated Household Survey⁴, and a 2003 census of schooling choice conducted by our research team. The fact that three sources use different definitions of madrassa enrollment, and were collected at different times by individuals with very different institutional affiliations provides independent verification of enrollment estimates and allows us to determine the sensitivity of our results.

The household data tells us whether a child is enrolled full-time in a madrassa, but not whether a child goes for an hour on any given day to study the Quran. Therefore this data does not confound full-time with part-time attendees—a child who attends a public school during the day and a madrassa in the evening is recorded as enrolled in a public school. This is an important distinction since parents might use a modicum of madrassa or mosque based education to teach their children about religion. Consequently, if we contrast these household-based numbers with numbers from establishment-based reports, discrepancies can arise. From virtually any policy perspective including evening quran classes in enrollment figures seems misguided. Regrettably, until now almost all enrollment numbers cited have been based on establishment surveys which do just that.

These data sources show that around 200,000 children were enrolled full-time in madrassas before 2001. Since 2001, our school census suggests that these numbers may have increased somewhat, although the experience varies across districts. To put this number in context, total primary enrollment (grades 1-5) in public and private schools stood at 17.4 million in 2003 (Government of Pakistan, Ministry of Finance, 2003). The choice of madrassa schooling viewed as either the percentage of eligible children or the percentage of enrolled children is statistically insignificant for the average Pakistani household. Enrollment in madrassas accounts for approximately 0.3 percent of all children between the ages of five and nineteen. Given that the overall enrollment rate for this age-group is roughly 42 percent, this represents less than 0.7 percent of all enrolled children, an order of magnitude less than the 33 percent cited by the International Crisis Group report (2002) or the 1.5 million students enrolled reported by the Washington Post in July 2002.⁵

³ This is complemented with the census of private schools carried out by the Federal Bureau of Statistics in 2000 to provide statistics for private versus public enrollment.

⁴The PIHS is the equivalent of the widely used Living Standard Measurement Surveys (LSMS) implemented in various countries. See <http://www.worldbank.org/lsm> for extensive notes on the 1991 PIHS. See also www.statpak.gov.pk for information on the census and the Federal Bureau of Statistics data.

⁵ As is discussed later, the International Crisis Group recently retracted its widely cited estimate of 33 percent after a reviewing a draft of this paper.

The significant differences across regions and trends over time help us understand average madrassa enrollment. In terms of proportions of the enrolled population, the top 10 districts out of a total of 101, lie in the so-called “Pashtun” belt on the western border of Afghanistan. Outside the Pashtun belt, madrassa enrollment is thinly, but evenly, spread across the rest of the country. Madrassa enrollment declined from 1940 to 1980 but increased during the religion-based resistance to the invasion of Afghanistan by the Soviets in 1979. The largest jump in madrassa enrollment is for the cohort aged 10 in the period 1989-93—coinciding with the withdrawal of the Soviet Union and the rise of the Taliban.

Outside the “Pashtun” belt, the distribution of madrassa enrollment at the level of the village is spread evenly with most variation within rather than between villages. Among the households covered by our 2003 census, we find the same pattern. The prevailing hypothesis that households do not have other schooling options and thus send their children to religious schools, or that households are religiously minded and thus choose madrassas over private and public schools is not supported by the data.

We looked at households with at least two enrolled children where one child attends a madrassa. Such households are small in number, accounting for less than 1 percent of the sample. Among these households, *less than 25 percent* send *all* their children to madrassas; in contrast, 50 percent send their children to both madrassas and public schools and another 27 percent use the private school option. This “stylized fact” requires a theory of variation between *children* rather than households to explain such enrollment.⁶ Widely promoted theories of madrassa enrollment based on household-level attributes such as income or religiosity and village-level characteristics such as alternative schooling options, simply do not explain the substantial variation within households.

Our data is not extensive enough to answer the important question of what explains enrollment in madrassas either. Instead we offer suggestive evidence for the various hypotheses forwarded in the literature on factors that may lead to enrollment in a madrassa. Although we find that the Afghan war during the eighties had an impact on madrassa enrollment, our ability to predict madrassa enrollment using multivariate regressions is poor. There is weak evidence to support the hypothesis that poorer and less-educated families are more likely to send a child to a madrassa, and somewhat stronger findings that poor children in settlements without a school use

⁶ One such theory, familiar to historians of religious schooling in European countries, is primogeniture (inheritance of the first-born of the parent’s wealth), which often led to secular education for the first-born and careers in the church for younger siblings. Other explanations could be differences between siblings in terms of their abilities, gender, or health (for instance, disabled children may be more likely to be enrolled in madrassas).

madrassas more often. There is *no* evidence for explanations based on household preferences such as religiosity.

The remainder of the paper is structured as follows. Section 2 summarizes recent literature (including the popular press) on the extent and penetration of madrassa enrollment. Section 3 uses existing data sources as well as our own survey to provide a comprehensive picture of madrassa enrollment. Section 4 looks at geographical variation in madrassa enrollment and trends over time. Section 5 and 6 examines variation across households and comments on the consistency of the data with some hypothesis that have been advanced by other authors. Section 7 concludes.

2. What do Reports and the Popular Press Say?

We looked at three different types of articles and reports: articles in mainstream American and international newspapers⁷; reports and articles by American and international scholars affiliated with international think tanks, institutes, and the government (including the 9-11 Commission Report)⁸; and studies by Pakistani scholars working in Pakistan and abroad.⁹

Three facts stand out. First, enrollment figures vary widely, ranging from 500,000 children to 1.7 million children. There are inconsistencies in estimates sometimes even for the same newspaper. For example, between March 2002 and July 2002, figures for madrassa enrollment cited in *The Washington Post* tripled from 500,000 to 1.5 million. Second, only two newspaper articles benchmarked these numbers with the percentage of children enrolled in schools (*The Times*, August 2002 and *Los Angeles Times*, April 2003). Here too there is a sea of difference between the proportions they report—according to the *Los Angeles Times*, 10 percent of all Pakistani students are being educated in madrassas; *The Times*, however, citing an International Crisis Group report (discussed later) suggests that this proportion is closer to 33 percent. Third, the sources for *all* these reports and articles are either newspaper accounts of police estimates or interviews with policymakers. We have yet to find a single article that tries to validate these numbers using established data sources.

⁷ We searched 10 major newspapers using FACTIVA® in June 2004 for articles published in the past three years that mention “madrassas.” Table A1 in the appendix shows the range of figures and their underlying sources for the 44 articles found. Newspapers searched include the *Boston Globe*, *Chicago Tribune*, *Financial Times*, *The Guardian* (U.K.), *The Independent* (London), *Los Angeles Times*, *The New York Times*, *The Philadelphia Inquirer*, *The Times* (London) and *The Washington Post* for at least 3 occurrences of the word “madrassa” (spelled in different ways) from January 2001 to June 2004.

⁸ See for example Stern (2000), Singer (2001), International Crisis Group (2002).

⁹ See Rahman (2004), Rashid (2000) Zaman (2002)

The 9-11 Commission Report adopted the same methodology of interviews and reporting numbers based on secondary sources. We quote in full the passage relating to madrassas:

“Pakistan's endemic poverty, widespread corruption, and often ineffective government create opportunities for Islamist recruitment. Poor education is a particular concern. Millions of families, especially those with little money, send their children to religious schools, or madrassahs. Many of these schools are the only opportunity available for an education, but some have been used as incubators for violent extremism. According to a Karachi's police commander, there are 859 madrassahs teaching more than 200,000 youngsters in his city alone.” (Section 12.2).

This report provides only a footnote quoting an interview with a police commander and does not attempt to validate the numbers provided. Moreover, even the secondary sources referred to in the report do not base their estimates on published data sources.

The views from the academic world have been more nuanced and many have provided valuable descriptions of the madrassah and the general Islamic learning environment. e.g. Zaman (2004) is a detailed and insightful account of the evolution of the role of the *ulama* in South Asia. Stern (2000) provides vivid psychological insights on extremism in her case studies and Rahman (2004) provides a good overview of the Pakistani educational system. Nevertheless, the academic accounts when talking about madrassa numbers also mainly cite secondary sources without providing any serious verification. Stern (2000) refers to “...the estimated 40,000 to 50,000 madrassas in Pakistan...” without identifying any verifiable source. Singer (2001) claims that, “...there are as many as 45,000 such schools within Pakistan...” although he admits that “...the exact number has never been determined.” Pakistani scholars also tend to use secondary or unverifiable sources. For instance, in Zaman (2002) and Rahman (2004), the number of madrassa students and establishments is sourced from newspaper articles in Pakistan (The Dawn, 22 May 2002 and 16 January 2003). The newspaper articles in turn quote a police press release, where again the raw data is not available for verification. Similarly, Ahmed Rashid writes in his best-selling book on the Taliban (2000): “...in 1988 there were 8,000 madrassa and 25,000 unregistered ones, educating over half a million students.” The source cited in Footnote 13 of Chapter 6 of the book is “*Intelligence report presented to the cabinet of Prime Minister Nawaz Sharif in 1992.*”

Finally, the newspaper articles and reports also attempted to explain the reasons behind the popularity of madrassas. The final column in Table A1 describes the main reasons advanced in the newspaper articles. Of these, one of the most popular cause and effect arguments is the

“failed-state” advanced by Singer (2001). According to this argument, the rise of madrassas is linked to the poor Pakistani public school system:

“The reason for the madrassas new centrality stems from the weakening of the Pakistani state...the madrassas became immensely popular by targeting the lower class and refugee populations, whom the Pakistani state has failed to provide proper access to education.” (Singer, 2001)

This kind of coverage has fostered two conclusions: madrassa enrollment rates are high and increasing, and the popularity of madrassas should be understood as a response by the poor to the government’s inability to provide public education and social welfare.¹⁰ Where is the evidence?

3. The Data About Madrassa Enrollment

We examine three important questions related to madrassa enrollment: the number and fraction of children (both school-aged and enrolled) enrolled in madrassas; the geographical variation in madrassa enrollment across Pakistan; and enrollment trends over time with particular attention to two benchmarks—the Soviet invasion of Afghanistan (and the rise of the Jihadi movement against them in 1979) and September 11, 2001.

3.1 Data Sources

We use three different types of data to verify our estimates and determine how sensitive they are to changes in definition and the year of the survey. Two sources are nationally representative, but date from 2001 or before, the third is data from a census of households carried out by the authors in 2003 as part of a project on educational choice. The first source is the “long” form of the population census in 1998, which is a large sample-based survey with information on enrollment. This survey is representative at the level of the district and region (rural or urban) and provides comprehensive coverage of the entire country.¹¹ We use this data to examine enrollment patterns across districts. The second type of data, based on household surveys, are different rounds of the Pakistan Integrated Household Survey (PIHS) carried out in 1991, 1998 and 2001.

¹⁰ Dalrymple (2005) presents an interesting review of some recent writings on the madrassa including a reference to an earlier draft of this paper. He is quite questioning of both simple theories of the prevalence of the madrassa and maintains a reasonably skeptical attitude towards all numbers. However, even he is guilty of not being aware of more than 25 million enrollment in government and private schools in Pakistan. His own preferred estimate of 800,000 in madrassa enrollment would still be approximately 3% of total enrollment—a far cry from his “parallel system of education”.

¹¹ This is complemented with the census of private schools carried out by the Federal Bureau of Statistics in 2000 (www.statpak.gov.pk).

While the data is not as extensive as the census, it contains detailed household information on schooling and income, and has been used extensively by researchers both in Pakistan and the United States. Finally, we use the census of schooling choice among households that our research team conducted in August 2003 (referred to as the project on “Learning and Educational Achievement in Punjab Schools”, or LEAPS). These data are only for three districts in the province of Punjab, but is very recent, was conducted by an independent team of academics, and is a complete census of all households in the selected villages. Consequently, it yields sufficient madrassa enrollment to examine correlations with household attributes in a meaningful manner (this data source provides information on four times as many children as the PIHS). Table A2 in the appendix shows how these different data sources are used in the paper.

Each source asks about madrassa enrollment in a slightly different but comparable way. The population census (1998) asks about the field-of-education (“*What is name’s field of education?*”) with options that include (for instance) engineering, medicine, or religious education. This question is also asked of all literate adults irrespective of their current enrollment status, allowing for comparisons in the stock of religious education over time. The PIHS rounds ask, “*What type of school is name currently attending?*” with options that include government school, private school, or *deeni-madrassa* (religious schooling). Finally, the LEAPS census directly asks, “*Is the child enrolled in a madrassa or an Islamic education school?*” Fortunately these different questions all give rise to similar numbers. This is reassuring since it suggests that any one particular result is not driven by the specific question or definition that was used.

3.2 Defining Madrassa Enrollment

Defining whether a child is going to school or not is not an easy task in a low-income setting—numerous debates in the literature discuss the advantages (and limitations) of using “enrollment” versus attendance as alternate measures.¹² Breaking down enrollment by the *type of school* that the child attends is potentially a harder task. Our estimates are all based on household surveys—an interviewer goes to a household and asks about the enrollment status of every child. Some estimates in the literature are based on *establishment* surveys, where interviewers go to madrassas and ask about total enrollment in the institution. There are clear implications of going the household route.

¹² See e.g. Glewwe, P. and M. Kremer (2005)

First, the use of multiple types of educational facilities complicates matters. A child who is enrolled in a public school could still pay for additional private tuition. In a household-based survey, such a child will be counted as enrolled in a public school; yet establishment-based surveys that include private tuition centers will also include such children in the private sector. In using household-based data, a child going to a public or private school in the morning and going to a madrassah for Quranic education part time, say in the evening would be excluded from our sample.

Second, children can come in and out of madrassas. Current enrollment by type of school, using an analogy from public health, provides a “prevalence” rather than “incidence” rate. That is, if children use both types of schools in different years, asking what type of school a child is enrolled in provides an accurate picture of current enrollment patterns but does not tell us what percentage of children were *ever enrolled* in public or private schools. This is an alternate exercise, which longer-term data can get at.

Third, our numbers could be lower than the actual enrollment if a significant proportion of those enrolled in madrassas are not linked to any household. This could happen if the share of orphans in madrassas is higher than their share in regular schools. We adjust for this point when we discuss our numbers.

Fourth, the definition of a “private” school or “madrassa” itself may be problematic. For instance, private schools could include those that are registered with the government as well as those that are not. Similarly, madrassas can be registered, or teaching can occur in an informal space. Since we use household-based data, this problem is somewhat attenuated—to the extent that parents report the child as enrolled in a madrassa irrespective of the registration status, our numbers should accurately reflect madrassa enrollment. We have defined madrassas as schools that teach a religious curriculum rather than one proposed by the ministry of education. There are schools in our sample that teach the government prescribed curriculum but add some elements of religious teaching and are not explicitly involved with any sectarian or religious group.¹³ We do not count these as madrassas.¹⁴

¹³ This is in line with the approved principle of “additionality” of the Pakistan ministry of education and most private schools that want to teach computer science or other additional subjects follow this regulation

¹⁴ One type of school that could be mistakenly counted as a madrassa is a mosque school. These are schools housed in mosques that teach the normal state curriculum by regular education department teachers. These were started in the sixth five year plan (1983-1988) under the Junejo government as a cost effective way to use mosques but the program was not picked up later and is now gradually dying out. There are 8000 or so mosque schools in Punjab (EMIS).

Finally, a general point in comparing enrollment across school types is that we must compare apples with apples. One key benefit of using household surveys is that all types of schools will suffer from the same measurement problems and thus not have any bias. If using establishment based data, one should use this for all types of schools as well. One should not compare madrasa enrollment using establishment data with government school data using household-based surveys.

3.3 How Many?

According to the 1998 census of population, 159,225 students (all ages) were enrolled in madrassas; this represents 0.31 percent of all children between the ages of 5 and 19 (Table 1, Row 1). Since the total gross enrollment rate (the gross enrollment rate or GER is defined as total enrollment divided by the number of “eligible” children—in this case, children between the ages of 5-19) is 45 percent, madrasa enrollment as a fraction of total enrollment increases to 0.7 percent. The numbers from the PIHS are very similar—with between 151,000 and 178,000 children enrolled in madrassas across the 1991, 1998 and 2001 rounds, this accounts for less than 1 percent of all enrollment (around 0.7 percent of all enrollments in the 1991, 1998 and 2001 rounds). Despite the different definitions used and the problem of accurately estimating a low probability event in the PIHS (these surveys typically identify less than 100 children enrolled in madrassas), the numbers are well within the standard error bounds, and within 0.1 percentage points of each other—that is, there is less than 1/1000th of a difference between the percentages of enrolled children going to madrassas depending on the different sources.

These numbers can be benchmarked to enrollment in regular schools. Public schools run by the government enrolled between 16 and 17 *million* children in 1998 (Census of Pakistan, 1998); private schools enrolled almost one-third as many, at 6 million in 2000 (Federal Bureau of Statistics, Survey of Private Educational Institutes in Pakistan, 2000). As a percentage of children between the ages of 5 and 19, government schools accounted for 33 percent and private schools for another 12 percent. Again, since roughly one-half of all children between the ages of 5 and 19 are enrolled in school, as a percentage of enrollments these numbers approximately double to 73 percent and 26 percent.¹⁵ This comparison suggests that there are 38 times as many children in private and 104 times as many in government schools compared to madrassas.¹⁶

¹⁵ Boys are more likely to be enrolled in madrassas compared to girls. The census reports that there are only 43 females enrolled in madrassas for every 100 males. This imbalance is significantly greater than the 68 enrolled females for every 100 enrolled males in overall education. For both boys and girls, madrasa enrollment starts off at the same age cohort between 5 and 9 years, but girls’ enrollment drops off sharply while boys enrollment jumps for children between 10 and 14 and then tapers off for the cohort in their mid-twenties. That there are fewer females in madrassas is not surprising, but the similar number of girls as boys in the youngest age category is somewhat unexpected. Interestingly,

There may be grounds for skepticism about these estimates for madrassa enrollment. Since the data were collected prior to 2001, geopolitical changes after September 11 could have led to greater madrassa enrollment. In addition, the household-based survey faces the usual problems of accurately estimating a low-probability event—although enrollment is less than 1 percent in these surveys, the sampling error is large (see Bauman, 2001, for a description of similar problems in estimating home-schooling in the United States). Finally, while the census of populations does not face the problem of small samples, it is not that recent (1998) and some may have reservations regarding the quality of government data.¹⁷

The LEAPS census of schooling choice conducted in 2003 provides a rough check on these numbers (see appendix for details). This census was conducted in three districts of Punjab and villages were chosen randomly based on the criterion that each village must have at least one private school. Typically, this means that the villages lies somewhere between fully urban and fully rural populations and are *not representative* of the districts that they are in.

Estimates from the LEAPS census show that as a percentage of enrolled children, the numbers in two of the three districts are slightly higher than those of the population census. In the third (Rahim Yar Khan) there is a large difference, with the census reporting that 1 percent of all school-going children attended madrassas, and the LEAPS showing that the fraction is closer to 3.7 percent (Table 2). There are three potential explanations for this difference. First, the LEAPS data is not representative of the district and could be off the mark for districts with wide variation in madrassa enrollment across rural and urban samples. Second, the experience of the last five years could have varied dramatically across districts—in some, the enrollment fractions did not change and in others it increased substantially. Third, the data could point to systematic problems with the census estimates from certain districts, or the statistical problems that arise when we try to estimate low-probability events.

for children between 5 and 9, the enrollments sex ratio is slightly *higher* in madrassa than in general education (76.9 vs. 75.6 percent) but drops off at a much faster rate in the madrassa as children become older. The usual disclaimers about the numbers being too small to draw finer comparisons still apply.

¹⁶ We could also compare these numbers to enrollment across countries. In their work on religious enrollment, Berman and Stepanyan (2003) compare a number of countries, including Pakistan (albeit based only on the PIHS). The comparison is fraught with difficulties, since they sometimes uses stocks and sometimes flows and the data is at times at the household level and others at the individual level. Nevertheless, using their numbers, as a percentage of total enrollment, madrassa enrollment in Pakistan is roughly equivalent to that in Bangladesh and Côte d'Ivoire and much less than in India (two states only) or Indonesia. Interestingly, madrassa enrollment in Pakistan corresponds closely to census estimates of *home* rather than religious schooling in the United States—the former ranges from 1 to 2 percent (Bauman 2001) while the latter is closer to 8 percent (National Center for Education Statistics, 2001).

¹⁷ In our own analysis, we find the quality of the data generated by the Federal Bureau of Statistics in Pakistan to be consistently high. We have used the FBS Census of Private Schools (PEIP, 2000) to guide our fieldwork and feasibility study for LEAPS and found it tallied with the situation on the ground quite well, even in remote villages.

3.4 Explaining the Differences

As stated earlier, a number of reasons could account for differences between the estimates presented here and those in the popular press. If we take for granted that the existing data sources are dated, then reality is better represented by the more recent LEAPS census data. In this case, total enrollment in madrassas, using a population-weighted average across the three districts would be 1.7 times that in the 1998 government census. Adding in a (generous) 5 percent enrollment growth rate for every year, this puts the total number of children enrolled in madrassas at 410,000. This estimate is still conservative if a substantial fraction of children in madrassas are orphans not be picked up in household-based surveys. While there are no countrywide estimates, a study by the Institute of Policy Studies in Islamabad (2002) found that 15 percent of all children enrolled in a sample of madrassas were orphans. In the worst-case scenario (where all orphans are enrolled only in madrassas), our numbers would have to be inflated by 15 percent to arrive at actual enrollment. Thus, to arrive at a liberal estimate, we can add in a further 15 percent for orphans to take the total up to (approximately) 475,000, which is still below the *lowest* estimate in the existing literature.

Police surveys in Punjab and Sindh quoted in the literature estimate that there are 253,125 students enrolled in madrassas in Punjab in 2002 and 264,169 in Sindh in 2003. Our equivalent number from 1998 for the Punjab is 96,125. For Sindh the number is ten times greater than that in the census, with Karachi accounting for all the difference. While we try to investigate further the details of the police numbers, there are two observations. First, there is no information available on the methodology of the police surveys. Our interviews suggest a lack of documentation, certainly when compared to those of established statistical surveys. We have no way of knowing whether these numbers are from enrollment records in the madrassas or children attending on a given day or whether they are based on a census of establishments or a sample. Second, the police surveys are establishment-based surveys that include all students who attend madrassas (full-time students and children attending part-time for Quranic literacy classes), whereas the census and PIHS question include only those who attend madrassas full-time. Anecdotal evidence suggests that small stints in a madrassa, either for Quranic literacy or for a short time after primary school is fairly common.¹⁸

Particularly surprising is the vast discrepancy in madrassa enrollment as a fraction of enrolled students. Prior to this paper, the predominant estimate came from an International Crisis Group report (2002) that estimated a third of all enrolled Pakistani children attend madrassas.

Our estimates, by comparison, suggest that this fraction is close to 1 percent. Upon investigating the discrepancy, we found that the ICG's estimate was the result of a transcription error. After a draft of this paper pointed out the mistake, ICG retracted the estimate. Unfortunately, during the two years it remained uncorrected the estimate itself was widely propagated in a number of major newspapers. The immediate validation and propagation of this number without any attempt to "fact-check" is perhaps more troubling than the original error. For example, even if the number of enrolled in madrassas were 1.5 million, the highest estimate in reports and articles, this would still imply that 3 percent of all children in the educational system are enrolled in madrassas.

Ali's (2005) study of madrassas, is limited in geographic scope to one tehsil (equivalent to a county) Ahmedpur East in Punjab (There are more than 300 tehsils in Pakistan) and the federal capital Islamabad. It also does not fully address the potential problems with establishment based data of both madrassa and government schools. Moreover, its numbers on government schools (taken from secondary sources) don't match with the Punjab government's own EMIS data. It also attempts a simplistic and somewhat casual quantitative (in the sense of not recognizing basic issues of statistical correlation and causality) analysis of madrassa location and development indicators.

4. Variation across Districts and Time

Using the published data sources we can also look at how madrassa enrollment varies across different districts—the difference between Attock and Rahim Yar Khan in the LEAPS data suggests that this may be substantial—and we can look at how such enrollment has changed over time. Both these exercises yield similar conclusions, pointing to the importance of the border region with Afghanistan and the impact of the Afghan war years on time trends in madrassa enrollment.

4.1 Variation across Districts

Pakistan is divided administratively into four provinces with 102 districts—Punjab, Balochistan, North-West Frontier Provinces (NWFP), and Sindh—plus the federal capital Islamabad, the Federally Administered Tribal Areas (FATA), the federally administered Northern Areas and Azad Jammu and Kashmir (AJK). The four provinces or Punjab, Balochistan, Sindh and NWFP, together with Islamabad, account for more than 97 percent of the population. Geographically, parts of Balochistan, the NWFP and FATA border Afghanistan. Sindh and Balochistan are sparsely populated provinces, with the exception of Karachi in Sindh, which is the single biggest metropolis in the country with a population approaching 10 million. We use

data from the population census, 1998, as well as the census of private schooling, 2000, to provide estimates of madrassa, private, and government school enrollment in each district except for those in the province of FATA.

The geographical dispersion of madrassa enrollment depends on how we define madrassa prevalence. There are three alternatives. We could present a geographical breakdown of the *total* number of children enrolled in madrassas. This number is related to the total population of the district, and may thus reflect only the size of the district relative to others. Another option is to use the equivalent of the Gross Enrollment Ratio (GER), defined as the total enrollment divided by the number of “eligible” children—in this case, children between the ages of 5-19. This statistic provides an estimate of the “penetration” of madrassas, but it does not take into account the overall enrollment decision of the family. Thus, a district with two children enrolled in madrassas, and 20 children enrolled in private or public schools out of a total of 100 children will have exactly the same Gross Enrollment Ratio (GER) as a district with two children enrolled in madrassas and 98 children enrolled in regular schools. To the extent that we want to distinguish between these two districts, a third statistic, the ratio of children enrolled in madrassas to total enrollment (the madrassa fraction of enrollment or MFOE), can also be used. The picture changes dramatically depending on whether we use the raw numbers or the ratio of children enrolled in madrassas to total enrollment. However, since enrollment in madrassas is highly correlated with total enrollment, there is little difference in the pattern of madrassa enrollment whether we use the GER or the fraction of enrolled children in madrassas.

Figure 1a shows the *number* of children enrolled in madrassas for every district in the country. As expected, numbers are closely linked to population size—the three most populated districts account for one-quarter of the enrollment, with the bulk of enrollment in large urban metropolises. Madrassa enrollment is also higher in the Saraiki language belt districts of Southern Punjab (for instance, Rahim Yar Khan) compared to the rest of the country.

The fact that the *number of children* enrolled in madrassas is higher in more populated districts indicates nothing more than the size of the district. Figure 1b normalizes this number with total enrollment. Districts in the dark solid colors have high madrassa enrollment compared to total enrollment (still less than 7.5 percent), and districts in diagonal stripes have the lowest enrollment fractions in madrassas. What stands out is the very high madrassa fraction along (and only along) the western border with Afghanistan. This is the Pashtun belt—the “Pashto” speaking population most directly influenced by events in Afghanistan.

Pishin (the district bordering the Kandahar region of Afghanistan) is the only Pashto speaking district in the top 15 when we use the total number of children enrolled in madrassas, but when we deflate this number by total enrollment (or the number of eligible children) *all* the top ten districts are in the Pashto speaking belt. If we use 2 percent of total enrollment as a cutoff for “extreme” madrassa enrollment, all 14 districts that can be classified as such are either in Balochistan or the North-West Frontier Province. Leaving aside the Pashtun belt and Karachi, madrassa enrollment in the rest of the country is spread very thinly across all districts. That is, rather than districts with high enrollment and districts with low enrollment, a very small number of children in every district are enrolled in madrassas. Seventeen districts fall in the 1 to 2 percent MFOE group with the remainder reporting madrassa FOE below 1 percent. For the bulk of the districts in the country, madrassa enrollment falls between 0.02 and 1 percent of total enrollment.

Thus, there are two distinct geographical patterns of madrassa enrollment in the country. Enrollment is systematically higher among districts that border Afghanistan (still with just over 4 percent of enrolled children in madrassas in all of them except Pishin). Apart from this group, enrollment is thinly spread among all districts in the country. Perhaps this pattern also reflects variation in the types of madrassas in these different areas—clearly, differences (if any) between madrassas in the Pashto belt and the rest of the country is a potential area for research.

4.2 Variation across Time

The PIHS data show that the growth in madrassa enrollment during the 1990s was the same as that in enrollment in all schools. In fact, madrassa enrollment as a fraction of total enrollment decreased marginally, although the differences are well within the margin of error. Since the *absolute* number of madrassa-going students increased by 16 percent over the 10 years, the decline in the proportion was due to slightly higher growths in overall enrollment during this period.

Over a longer time horizon, we also compare the stock of individuals who stated a religious “field-of-education” on the census long-form. This cohort-based analysis assumes that changes in madrassa enrollment will be picked up 10 to 14 years after the birth of the relevant cohort. That is, a sudden increase in 1980 would correspond to an increase in the stock of individuals reporting religious education for the cohort born between 1966 and 1970.

The stock of individuals reporting religious education as their “field” displays a distinct U-shaped pattern (Figure 2). People born between 1944 and 1948 were more likely to have religious education than those born between 1949 and 1953. This pattern continues until the

cohort born between 1959 and 1963, then stabilizes for the next two cohorts and finally starts increasing. Those born between 1974 and 1978 were *more* likely to report religious education as their field than those before. This increase continues until the last cohort we have completed educational history data for, those born between 1979 and 1983.

Interestingly, the downward trend halts for the age-cohort that comes of school-going age in the years surrounding the rise of the Zia-ul-Haq military government and the ensuing religion-based resistance to the Soviet invasion of Afghanistan starting in 1979. Further, the largest jump is in the cohort born in 1979-83. This cohort would be 10 years of age in the period 1989-93—coinciding with the withdrawal of the Soviet Union and the rise of the Taliban.

5. Variation across Households

This section looks at variation in madrassa enrollment at the level of the household. This study was not designed, and is not capable of, presenting definitive statements regarding the choice of madrassas among households as a schooling choice. As such, we do not attempt to go beyond simple tabulations and associations. Nevertheless, the exercise adds some value to our understanding of madrassa enrollment.¹⁹

Previous studies on this important question (Berman and Stepanyan, 2004) have been hampered by small sample sizes on the one hand (there are 100 children who attend madrassas in the PIHS data) and lack of household-level data (the census only provides district-level aggregates). In contrast, the LEAPS census has schooling choice data on 150,000 children at the household level; even with 1 percent enrollment, this gives us 1,500 children enrolled in madrassas, a number that is sufficiently large to draw meaningful conclusions.

We first ask a simple question. If we look at households who have a child enrolled in a madrassa, what do the schooling choices of *other* children in the household look like? We look at households that had at least two enrolled children, and classify them as (a) “all madrassa” if all the children attend a madrassa, (b) “madrassa/public” if at least one child goes to the madrassa and one to a public school, (c) “madrassa/private” if one attends the madrassa and the other attends private school and (d) “madrassa/public/private” if the households had 3 or more enrolled

¹⁹ Differences in madrassa enrollment could be driven by differences across villages rather than households—i.e., in some villages all the children go to madrassas and in others none of the children attend. Most of the variation in madrassa enrollment (in the set of enrolled children) is *within* rather *than between* villages. For example the difference in enrollment ratios in a village at the 90th percentile of madrassa enrollment and one at the 10th percentile is only 3.4 percent. This also holds at the more disaggregated settlement level (some villages have more than one settlement), although less strongly, with more variation stemming from *within* settlement differences than *between*.

children using all three options simultaneously. Finally, we repeated this exercise in households with at least one child going to public school and with one child going to private school.

The results are startling (Figure 3). Among households with at least one child enrolled in a madrassa (call them “madrassa households”) only 23.5 percent can be classified as “all madrassa” households. The majority of “madrassa households” (just under 50 percent) use both madrassas and public schools, and another 28 percent use either madrassas and private schools or all three simultaneously. Among households with at least one child enrolled in private school, 48.5 percent enroll all their children in private schools and another 49.6 percent use the private/public option simultaneously. If the choice of a madrassa or a private school provides information about the ideology of the household, the data suggest that the choice of a *private* school is more ideologically driven than the choice of a madrassa.

The fact that most variation in madrassa enrollment is *within* rather than *between* households implies that any predictions about who will send their child to a madrassa based on *household* attributes will be fairly poor. The comparison done by Berman and Stepanyan (2004) looked at differences between “madrassa households” and “non-madrassa” households. A similar comparison in the LEAPS data (Table 3) shows an association between lower-income households and madrassa enrollment and households with less educated heads and madrassa enrollment, but the magnitude of these associations is small. The heads of “madrassa households” are illiterate in 7 percent more cases and slightly poorer (0.5 percent more likely to earn less than Rs.7500 per month).²⁰ The largest difference between household types is their proximity to a private school—among households with a child in a madrassa, 49 percent live in settlements with a private school; this number is 72 percent for households with no children in madrassas.

6. Taking Stock: What can we say about established hypotheses?

Although the last finding could be seen as supporting the theory that madrassas have emerged as the only viable alternative to poor government schooling, a closer look shows that the prevalence of private schools substantially complicates matters. We look at the fraction of children enrolled and the market shares of schools offering public, private, and madrassa education under three different scenarios. One scenario is when both private and public schools are present in the settlement, the second is when *either* a private or a public school exists (non-

²⁰ The significant difference between madrassa and non-madrassa households in terms of income arises only when we use Rs.7,500 as the monthly income cutoff to distinguish poor and non-poor households—alternative cutoffs of Rs.2,500 or Rs.5,000 show no significant differences between poor and non-poor households. Importantly, 97% of all households earn below Rs.7,500.

exclusively), and the third when neither is available in the settlement that the household is located in.²¹

Three interesting findings emerge (Figure 4).

1. In settlements with both private and public schools, the share of private schools increases with income. Nevertheless, even among the poor more than 30 percent of all families send their children to private schools. Madrassas account for less than 1 percent of all enrollments, and this share is no higher among the poor compared to the rich.
2. In settlements with either a private or a public school the exact same patterns are observed with regard to income and again, madrassa shares are no different among the rich and the poor.
3. In settlements with no public or private schools the enrollment patterns are very different. The largest differences arise in the choice of enrollment, rather than schooling choice *conditional* on enrollment. In settlements without a public or a private school, families are more likely to exit from the educational system altogether rather than enroll their child in a madrassa. The drop in enrollment is dramatic, falling from 70 percent to 40 percent among the poor and from 87 percent to 68 percent among the rich. The market share of the different types of schools also changes. Government schools and madrassas *increase* their share while the private schools share drops. However, the increase in the market share of government schools is insufficient to overcome the drop in enrollment, so that total number of children in government schools still declines; the opposite is true for madrassas. These settlements are also the only ones where there is a clear relationship between income and madrassa enrollment—among the poorest, 4 percent of all enrolled children are in madrassas and among the rich this decreases to 2.5 percent.

These numbers suggest that the schooling decision for an average Pakistani household in a rural region consists of an enrollment decision (should I send my child to school) followed by a private/public decision, with a madrassas possibility. When there are no nearby schools, households exit from the educational system altogether although there is evidence of an increase in the market share of madrassas among the poor in these settlements. When both private and public schools are available, richer households exit to the private system, but there is no difference in madrassa shares with household income. It's possible that when richer households

²¹ Recall that the LEAPS sample was taken from a list frame of villages that had at least one private school. To look at schooling choices under these three scenarios, we divided villages into settlements and plotted enrollment shares in each type of settlements. These settlements are often far from each other, and thus act more as self-contained units than the administrative definition of a village. In the LEAPS data, there are 112 villages, but 253 settlements, generating considerable variation for this exercise. These findings are robust in a multivariate regression context.

use the private sector, resources are freed up for use in public schools leading to an overall increase in enrollment.

The key issue then becomes the placement of public and private schools. Andrabi, Das, and Khwaja (2005a) show that private schools overwhelmingly locate in villages where there are pre-existing public schools. This may not be an insurmountable barrier as 2,500 new private schools were set up between 1994 and 1995. Just three years later in 1998, 6,000 new schools were set up and in 1999 this increased to 8,000. Half of the growth in private schools occurred in rural villages. If current trends continue (and our data collected in 2004 suggests it will), the number of villages in Punjab province, with half the country's population, with a private school will approach 50 percent by the end of the decade.

These schools are not particularly expensive to attend. The median annual tuition fee in rural Punjab is Rs.650 (just under \$1 per month). Using household expenditure data from the PIHS, this represents 1.7 percent of average household expenditure so that a family with 4 children would spend 7 percent of total expenditure if all four children attended private schools (Andrabi, Das, and Khwaja, 2005b). By comparison, the ratio of private school fees to household income in high-income countries is high—for instance, the average annual fees in a private school in the United States of \$2,200 (National Center for Educational Statistics, 1993) corresponds to 9 percent of median per capita income. The analog in Punjab is closer to 2.5 percent suggesting a four-fold difference in the tuition to income ratio across the two economies.

A number of explanations apart from the “failed-state” hypothesis have been proposed in the literature. Another, equally valid hypothesis is that the rise of madrassa enrollment was linked to the Afghan war. The data does show a reversal of the declining trend in madrassa enrollment between 1948 and 1965, with increases in the percentage of adults with religious education in the cohorts born after this date. There is also wide geographical dispersion in the prevalence of madrassa education in Pakistan. Although all districts report that less than 2.5 percent of children in the relevant age group (children between the ages of 5 and 19) are going to madrassas, the Pashto speaking belt that borders Afghanistan stands out in terms of the popularity of madrassas as an educational choice.

The notion that the madrassa movement coincided with resistance to the Soviet invasion of Afghanistan is supported by the 1998 data from the population census. The increase in the stock of religiously educated individuals starts with the cohort that came of age in 1979 (the year of the Soviet invasion of Afghanistan) and the largest increase is for the cohort co-terminus with the rise of the Taliban. Combined with the fact that the largest enrollment percentage in Pakistan

is in the Pashtun belt bordering Afghanistan, this suggests events in neighboring Afghanistan influence madrassa enrollment.

Is there something intrinsic about Pashtun sensibility or tribal culture that leads to higher madrassa enrollment? The differentiation of the Pashtun and non-Pashtun districts does not extend to Pashtun and non-Pashtun households in the LEAPS data. We find no evidence that Pashtun households are more likely to send their children to Madrassas compared to the rest of the sample, suggesting that geopolitical factors and geographical proximity to Afghanistan matter more than cultural preferences.²²

Similarly there is no evidence for religiosity or household preference-based models of madrassa enrollment. The radical religiosity argument suggests that children are more likely to be sent to madrassas when the family favors a radical brand of Islam. If true, what are we to make of the fact that more than 75 percent of all households with a child in a madrassa also send a child to a public or private school? In a multivariate context we checked whether households identified as “radically Islamic” were more likely to send their child to a madrassa.²³ Again, we found no difference between these households and others—the probability of choosing a madrassa increased by 0.40 percent, but the increase was statistically insignificant and small.

Many interviews in the press suggest that madrassas provide free food and clothing and stipends to the poor. This implies significantly higher madrassa enrollment among poorer segments of the population, a view also advocated in a number of interviews with policymakers in Pakistan. The “three-scenarios” figure (Figure 4) shows that this is true only in settlements where there are neither private nor public schools. In general, the effect of income on enrollment

²² The data from the LEAPS census asked about ethnic and caste identity, and households that classified themselves as “Pathan” or “Afghani” were used to represent Pashtun households. In line with the usual residential patterns of individuals with Pashtun backgrounds, most of these households are in district Attock in the North of Punjab.

²³ In a largely Islamic country it is difficult to find good measures of religiosity. No data on religiosity was collected as part of the census and a more recent and detailed household survey that includes information on time-use elicits little variation—everyone reports high mosque attendance and regular prayers. An alternative, suggested by David Evans at Harvard University, which we pursue here, is to use recent developments in the use of “names.” Research by Fryer and Leavitt (2004) demonstrates the increasing use of names to define race identity in the United States. We postulate that households who named (at least) one child “Osama” (also spelt Usamah, Usamma or Usama) are more likely to favor a radical brand of Islam. The use of the name Osama was minimal until 1998, and then peaks in 1998 and 2001, following disruptive events. Of course, the naming of the child may reflect name recognition rather than ideology and this must be kept in mind. To the extent that naming a child “Osama” is a good indicator of radical religiosity, we find no evidence of this effect in the data.

overwhelms the effect on the choice of education type making madrassa enrollment *lower* as a percentage of population in poorer families than in richer families.²⁴

7. Conclusion and Caveats

Analysis of published data sources and the LEAPS survey show that existing estimates in the literature of madrassa enrollment are highly exaggerated. Our most liberal estimate, which doubles the census/PIHS numbers, and adds in a further 15 percent for orphans, is still below the lowest estimate in newspaper articles and policy reports. This imbalance is accentuated when we look at the fraction of children enrolled in madrassas, either as a percentage of school-aged children or enrolled children. This fraction has been overstated by a factor of 10 in the Los Angeles Times (2003), and 33 in the report by the International Crisis Group (2002). Moreover, there is currently no evidence of a dramatic explosion of enrollment in madrassas in the 1990s. Beliefs about prevalence of madrassa enrollment in Pakistan are an example of conventional wisdom, in the classic Galbraithian sense—we accept these numbers simply because we find them acceptable.

The geographical dispersion of madrassa enrollment helps us to understand the use of religious schooling. Madrassas are most popular in the Pashtun belt with the top ten districts in terms of the fraction of enrolled children in madrassas all bordering Afghanistan (where they still account for less than 2 percent of all school-aged children). Time trends also support a strong Afghan war influence. Madrassas declined in popularity for cohorts born between 1947 and 1974 and increased thereafter. The biggest jump is for the cohort born between 1979 and 1983; this corresponds to those children who would start attending school around the rise of the religion based resistance to the Soviet invasion of Afghanistan. It appears that this “Afghan” influence is related more to geographical proximity than to preferences for religious schooling among Afghan immigrants—the LEAPS data shows no difference between Pashtun and non-Pashtun households in the use of madrassas.

At the level of the household, most variation in madrassas enrollment is *within* rather than *between* families. Among households with at least one child enrolled in a madrassa, 75

²⁴ A multivariate analysis of madrassa enrollment using household education, wealth, availability of outside options, child gender and age confirms the above analysis. The results are not reported here as they don't provide any additional information or insight.

percent send their other child to a public or private school or both. Historians of religious education choices will find this reassuring—during the 18th and 19th centuries, most European countries followed a similar pattern with one child sent to the church and others sent for a secular education (or no schooling at all).

Are poorer families more likely to send at least one child to a madrassa? At an aggregate level there is little difference between poor and rich households in the choice of religious schooling. However, this masks an important difference between two different types of settlements. In settlements where other schooling options exist, less than 1 percent of all enrolled children go to madrassas and this fraction is the same for all income groups. In settlements where there are no other schooling options the fraction of children going to madrassas increases and is higher among the poor compared to the rich (although it stays below 4 percent for all income groups). Nevertheless, the biggest difference between these two types of settlements is *not* the increase in the use of madrassas but the dramatic decline in overall enrollment. Thus, though the share of madrassas increases, this is offset by a sharp reduction in the size of the overall enrollment pie.

It is likely that the number of settlements without public or private schooling options will reduce considerably during the next decade, primarily due to an ongoing dramatic explosion in the growth of private schools. In 1983 there were approximately 3,300 private primary and secondary schools in the four biggest provinces (Jimenez and Tan 1987)). In 2000 the same four provinces had 32,000 private schools, an almost ten-fold increase in less than two decades (Andrabi, Das and Khwaja, 2005b). The growth in low-cost rural private schools is particularly dramatic, a point left out of the current debate on education in Pakistan. For the average child (even a relatively poor one), the most popular alternative to government schooling is a private school, not a madrassa.

This paper does not address a number of important questions. Both case studies and personal visits suggest that madrassas vary in their character and the education that they impart, ranging from neighborhood evening religious education schools to those incorporating a more extreme radical militant view. *None* of the data sources distinguish between different types of madrassas. All types of madrassas are included in our enrollment estimates. Furthermore, we are unable to provide an in-depth view of madrassa goers. For a case-based approach with detailed studies of select madrassa see Stern (2000) and various press reports. These case studies describe the mindset of madrassa students, teachers, and religious leaders and provide psychological portraits of such individuals.

The results presented here will speak differently to people with different concerns. One concern is to obtain a better understanding of how madrassas are incorporated into the educational decisions of households. This paper has talked about madrassa enrollment in a framework well known to empirical economists, which deals with issues of poverty and school quality in developing countries. Phrased in terms of household choice (should I send my child to public school, private school, or a madrassa?), the inclusion of madrassas as a schooling alternative has a negligible effect on household decisions. Consequently, for those interested in individual decisionmaking, our results suggest that madrassas do not form an important part of the decision-making of the average (or even the 98th percentile) of Pakistani households.

A second concern relates to global security issues and, under this view, absolute numbers matter. While we do not have data on whether madrassas promote extremist views and recognize that this is likely to differ across different types of madrassas, we can conclude that current estimates of madrassa enrollment—both absolutely and in percentage terms—are significantly overstated. Moreover, existing theories fail to adequately explain madrassa enrollment and largely ignore intra-household considerations which appear important.

If a pro-active policy towards madrassas is necessary despite the small numbers, more sophisticated theories as well as additional up-to-date, publicly available and verifiable data are needed. This however, is not an easy task. Given the spatial and temporal patterns of overall madrassa enrollment we found, and the very small percentage of children enrolled in madrassas, the only reliable way to capture such enrollment and the correlates of madrassa use is with very large scale surveys, perhaps even censuses, in a representative sample of villages *throughout* the country. This is a costly affair. Whether the money is better spent in increasing school quality in Pakistan requires careful thought.

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Appendix

Our first data source is the 1998 population census where the question asked on the long form is the type of schooling attended by the respondents. One of the coded response options is “*deeni taleem*”, exactly translated as religious education. The long form is not asked of every household, so the response is an estimate. However, the numbers are representative at the district rural/urban level. These census numbers are used for delimiting electoral constituencies and also as a sampling frame for most government and international surveys. We have used the census document for designing village level sampling and have found it to be generally consistent with our own fieldwork. We also exploit other district level data in the census document such as extent of public utilities like electrification and piped water as well as the quality of the housing stock (as a proxy for wealth) to correlate with religious enrollment.

The second data source is the Pakistan Integrated Household Survey series where we use data from 199, 1998 and 2000. This is a widely used data set internationally for poverty and related matters. The data on religious schooling has been used by Berman and Stepanyan (2004) as well. In all three surveys the question is on type of school and Islamic/religious is a coded response option.

Our third source is a specially conducted household educational census conducted by our research team in 125 villages in three districts of Punjab in 2003. This is an extremely rich data source that allows us to extensively look at school choice in rural Punjab at the household level as well as within the household. Here again, we classify a school as *madrassah* if it provides religious education and does not teach the state prescribed curriculum and a child as “enrolled in a *madrassa*” if he/she is attending a *madrassa* full-time. The sampling for this data was based on an ongoing study of educational choices in Pakistan. We picked villages randomly from the three districts *conditional* on their having a private school. Typically, this meant that the villages in our sample are (a) bigger and (b) richer than the average village in the district.

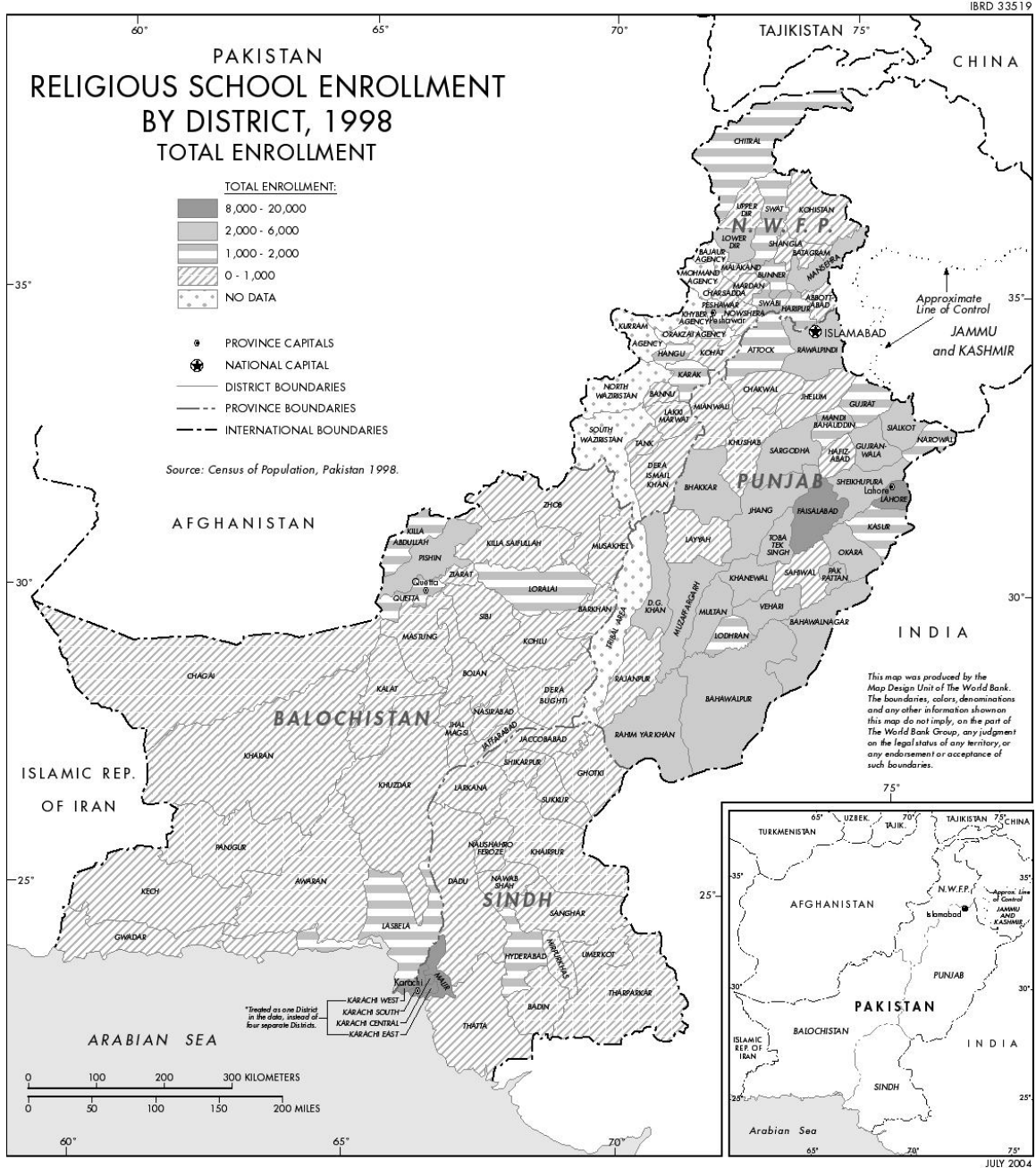
Problems of *madrassa* definition

Table A3 shows what happens under alternate assumptions regarding the definition of *madrassas*. The table presents three different estimates, the lowest of which we call the “conservative” estimate and the highest the “liberal” estimate. Typically, allowing for more liberal estimates doubles the percentage of children enrolled in *madrassas*; for this paper we use the moderate estimate as the relevant number.

This doubling though highlights an important problem. Since madrassa enrollment is very small as a percentage of the total, estimating the number precisely requires very large samples and a precise definition of what we mean. Despite interviews of over 150,000 children, we capture only 1,500 enrolled in madrassas. Small changes in the definition cause small absolute changes in the percentages, but could dramatically change the overall number. Likewise, for extremely low probability answers, errors in data entry even at a 1 percent rate can substantially affect the result.

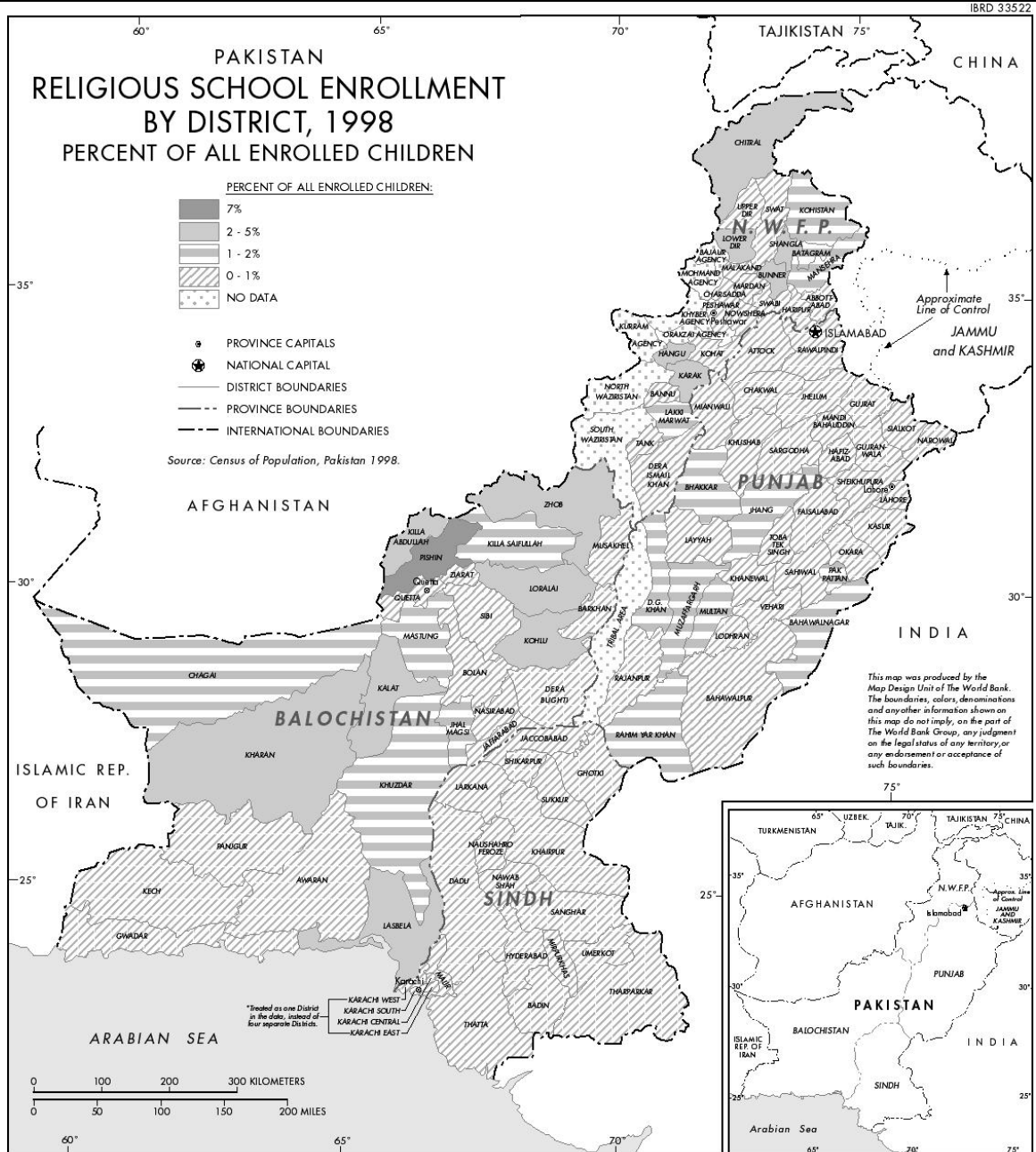
Figures and Tables

Figure 1a: Number of Children Enrolled in Religious Schools, Pakistan 1998



Source: The data for the districts is based on the “long-form” of the population census 1998. The long-form is administered to a sample of households in the census and is representative at the district/rural-urban level. We classify a child as enrolled in religious school if he/she reports her “main field of education” as “religious education”.

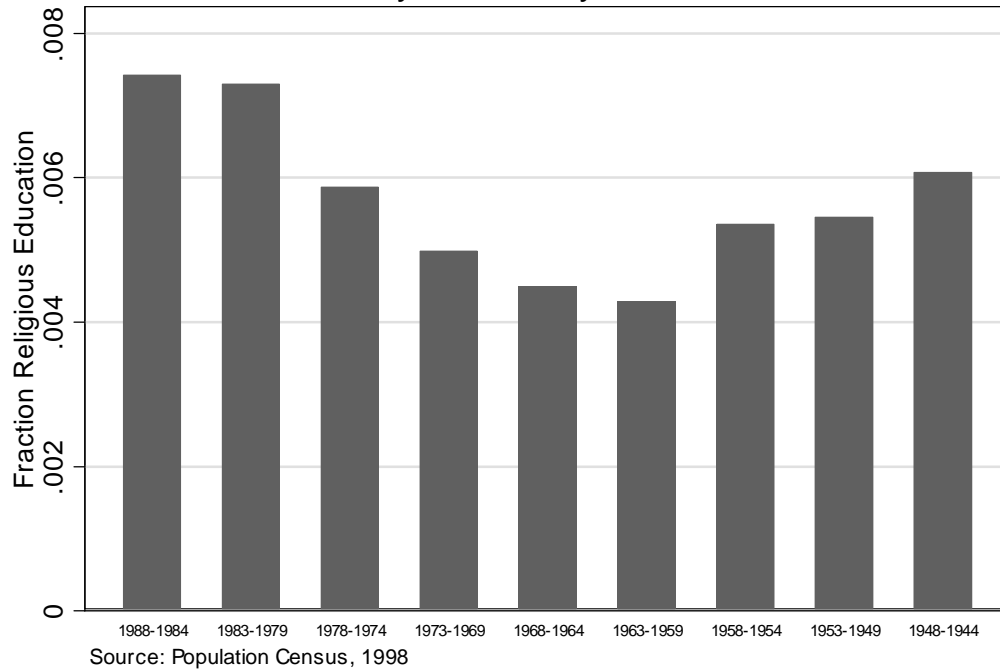
Figure 1b: % Children Enrolled in Religious Schools, Pakistan 1998



Source: Population Census, 1998. The percent of all enrolled children in religious schools is defined as the total number of children enrolled in religious schools divided by the total number of children enrolled in any school.

FIGURE 2

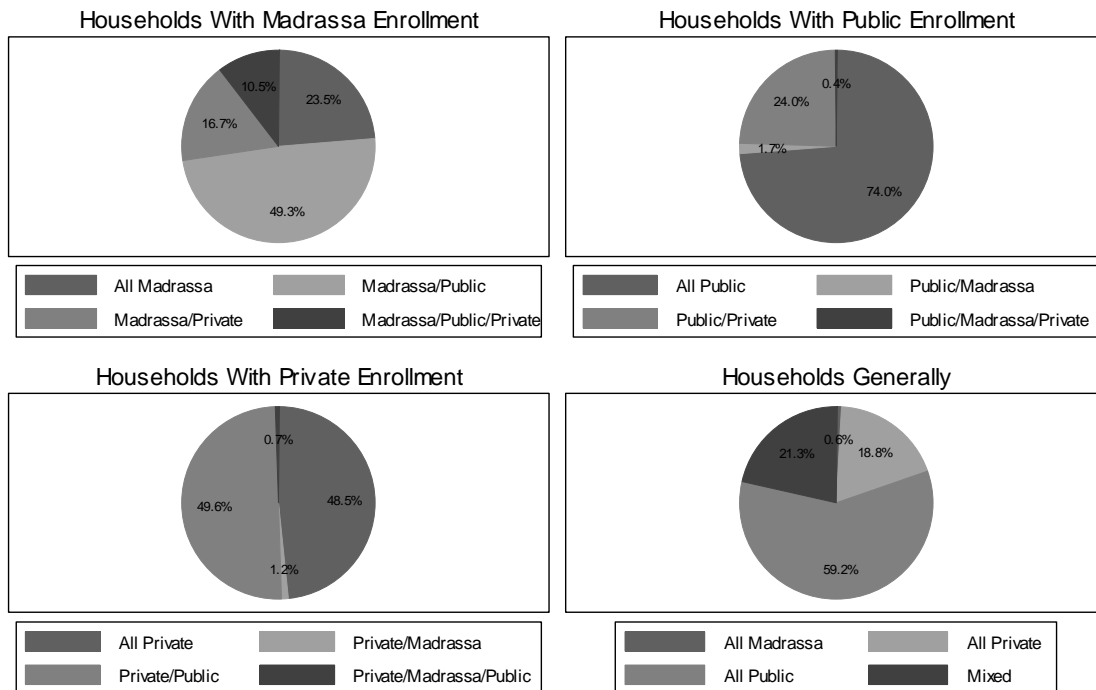
Literacy Source by Year of Birth



Note: Field of education is taken from the long form of the 1998 Population Census and is asked conditional on the interviewee being literate. Every bar shows the proportion of literature individuals in each birth cohort who report that they received a “religious education”. The first birth-cohort is individuals born between 1984 and 1988, who were therefore between the ages of 10 and 14 at the time of the survey. The last bar is for individuals born between 1944 and 1948, who were between 56 and 60 at the time of the survey. We make no attempt to control for selection due to deaths over this period.

FIGURE 3

Household Enrollment Choices

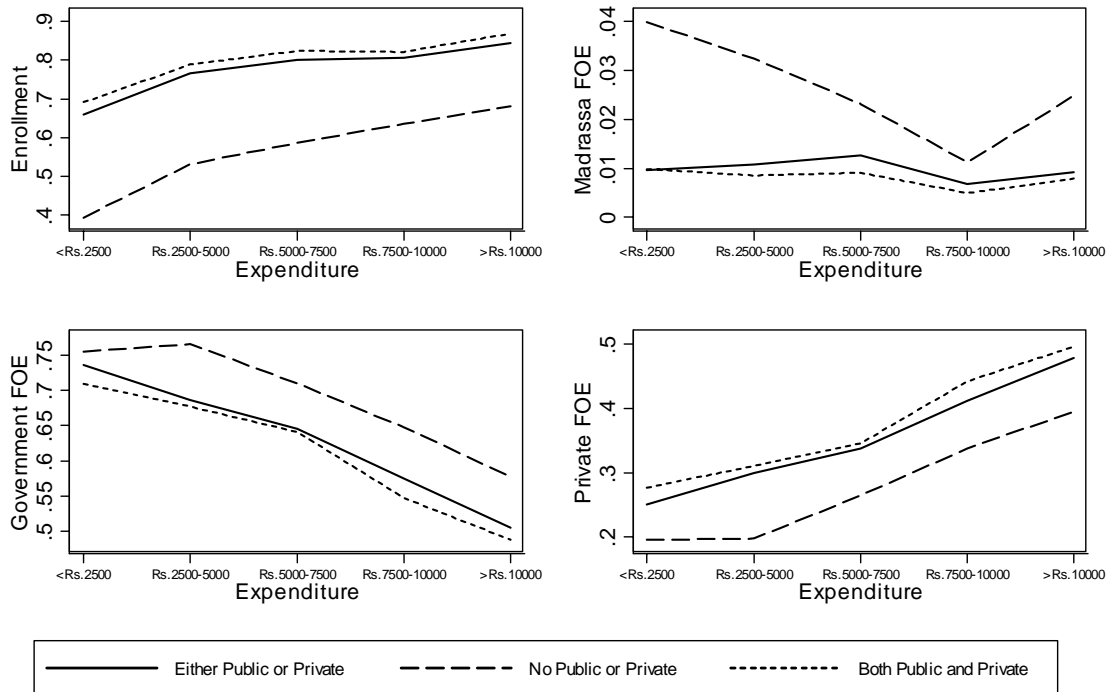


Source: LEAPS Population Census, 2003

Note: This graph shows enrollment choices among households with at least two enrolled children that have one or more children attending a madrassa (top-left), a government school (top-right), a private school (bottom-left) and any school (bottom-right). By construction, households with private, government and madrassa enrollment (Madrassa/Public/Private) must have at least three enrolled children. Thus, among households with at least one child in a madrassa, close to 50% have another child who is enrolled in a government school. The last graph (Households Generally) shows how prevalent every type of household is—for instance, only 0.6% of all households have all children enrolled in madrassas.

FIGURE 4

Enrollment by Presence of School and Expenditure



Source: LEAPS Population Census, 2003

Note: This figure shows the fraction of children enrolled (top-left) and the share of each sector in that enrollment. The figure on the top-right shows the share of madrasas, the bottom-left the share of government and the bottom-right the share of the private sector. In every figure, we show the appropriate fraction for three types of settlement—those with both a private and a public school, those with either a private or public school (including settlements with both) and those with neither a private nor a public school. These settlements were constructed through a mapping exercise in every village, and for the 125 villages in our sample, we have 253 settlements. We plot the shares against the self-reported monthly expenditures of the household. More than 95 percent of all households fall below the Rs.7,500 to Rs.10,000 cut-off.

TABLE I
COUNTRY-WIDE MADRASSA ENROLLMENT – DIFFERENT SOURCES

Data Source	Madrassa Enrollment	Madrassa as Fraction of Enrolled
Census of Population, 1998		
Total	159,225	0.70%
Male	111,085	0.82%
Female	48,140	0.53%
PIHS 1991	151,546	0.78% [0.16%]
PIHS 1998	178,436	0.74% [0.089%]
PIHS 2001	176,061	0.7% [0.093%]

Note: Survey standard errors in [brackets] where applicable. The census of population covers all of Pakistan except the Federally Administered Tribal Area (FATA). Included are Punjab, Balochistan, North-West Frontier Provinces (NWFP) and Sindh, plus the federal capital Islamabad and the federally administered Northern Areas and Azad Jammu and Kashmir (AJK). The Census of Population, 1998 estimates are based on the census “long-form”, which was administered on a sample basis to a large number of households. This data is representative at the district level for both rural and urban regions. The next three rows show estimates from the Pakistan Integrated Household Survey (PIHS) which is a household survey and is representative only at the provincial level for the four main provinces, which account for 97% of the country’s population—Punjab, Sindh, Balochistan and NWFP.

TABLE II
ENROLLED CHILDREN IN 3 DISTRICTS

School Type	Data Source	Attock	Faisalabad	Rahim Yar Khan
Government (%)	LEAPS	67.73	71.96	71.38
Private (%)	LEAPS	31.56	27.33	24.92
Madrassa (%)	LEAPS	0.71	0.70	3.70
	Population Census, 1998	0.50	0.49	1.03

Source: LEAPS, 2003. Population Census, 1998.

Note: LEAPS reports school type for enrolled children ages 5 – 15. Population Census reports field of education for children 5-14. LEAPS sample villages were randomly drawn from a list-frame of rural villages with at least one private school and thus are not representative of the district as a whole.

TABLE III
CHARACTERISTICS OF MADRASSA AND NON-MADRASSA HOUSEHOLDS

Household Type	Household Head Illiterate	Monthly Expenditure Under Rs. 7500	No Land	Settlement Has Private School
Non-Madrassa Household	0.4469 (0.0024)	0.9598 (0.0009)	0.6171 (0.0023)	0.7196 (0.0021)
Madrassa Household	0.5159 (0.0153)	0.9645 (0.0056)	0.6047 (0.0149)	0.4852 (0.0152)

Source: LEAPS, 2003.

Note: Standard error reported in parenthesis. Households are classified as “Madrassa Households” if one or more children are currently enrolled in a madrassa. “Non-Madrassa” households have at least one child enrolled in government or private school. Monthly expenditure under Rs. 7500 accounts for 97% of households. There is no difference in means between household types when a more even expenditure categorization is used.

Appendix Tables

TABLE A1

ARTICLES ON MADRASSAS IN PAKISTAN MAJOR NEWSPAPERS, DECEMBER 2000 -JUNE 2004

Source	Date	Type of study	Numbers	Reasons for Madrassa Enrollment
L.A. Times	28 December 2000	Case-Study	8,000 Madrassas	Studied Madrassa was originally set up for Afghan refugees
Financial Times	6 March 2001	Interview with President Musharraf	10,000 Madrassas, 1 million students	Welfare service to the poor
L.A. Times	12 August 2001	General article	None	Welfare service to the poor
L.A. Times	19 September 2001	Case-Study	18,000 in Peshawar	Religious indoctrination
The Washington Post	20 September 2001	Case-Study	None	Religious indoctrination
The Boston Globe	4 October 2001	Case Study	11,000 Madrassas, 1 million students	Boom during Afghan war. Fills a gap due to failed government education.
Financial Times	17 October 2001	Discussion of meeting between Colin Powell and President Musharraf	10,000 Madrassas	Religious Extremism
The Philadelphia Inquirer	9 November 2001	General article	7,000 – 8,000 Madrassas 700,000 students	None
Financial Times	17 November 2001	General article and interviews	4,000 Deobandi Madrassas	Religious teaching
The Philadelphia Inquirer	25 November 2001	General article and interviews	8,000 registered + 25,000 unregistered	On tribal border areas, madrassas instill Islam and preach hatred for non-Muslims
The Boston Globe	29 November 2001	General article		Fill gap in public. education, provide religious indoctrination
L.A. Times	10 December 2001	General article and interviews	10,000 madrassas that dominate education throughout rural Pakistan	Religious indoctrination
The Philadelphia Inquirer	16 December 2001	Interviews in Pishin district	None	Religious indoctrination in radical Islam

Source	Date	Type of study	Numbers	Reasons for Madrassa Enrollment
Chicago Tribune	23 December 2001	General article and interviews	None	Fill gap in public education, private schools too expensive.
Chicago Tribune	23 December 2001		None	Overwhelmingly popular with Pakistan's poor, fill a gap in public education
The Boston Globe	25 December 2001	General article and interviews	10's of thousands, 1 million children	Humanitarian aid for poor
L.A. Times	3 January 2002	General article and interviews	5,000 madrassas	Religious indoctrination. Madrassas as training ground for Afghan was with Soviet Union
L.A. Times	4 January 2002	General article and interviews	None	
The Philadelphia Inquirer	5 January 2002	News item on government	6,000 madrassas	None
Chicago Tribune	13 January 2002	News item on government	None	None
The Boston Globe	14 January 2002	News item + Interview	None	Religious indoctrination
Chicago Tribune	18 January 2002	Case Study	None	Radical religious indoctrination
L.A. Times	19 January 2002	News Item	None	See next
The Philadelphia Inquirer	23 January 2002	New Item	Thousands of madrassas	Explosion during the 1980s due to Afghan refugees Radical religious indoctrination
Chicago Tribune	24 January 2002	Case Study	None	Radical Islam
Washington Post	14 March 2002	General article	500,000 plus children	Failed public educational system; Religious studies Poor children + orphans
Boston Globe	18 March 2002	General article	Thousands of madrassas	

Source	Date	Type of study	Numbers	Reasons for Madrassa Enrollment
L.A. Times	23 March 2002	Case Study	3,700 (NWFP only)	Islamic studies based on a reactionary curriculum; service to the extremely poor; failed public educational system
Washington Post	28 April 2002	General article + Case Study	7,000 madrassas	Built for Afghan war against Soviet Union
L.A. Times	29 June 2002	General article	1.5 million students	Resistance to Soviet Union; Only schooling option for boys from poor families
Chicago Tribune	30 June 2002	General article	8,000 to 10,000 Madrassas	Resistance to Soviet Union; Only schooling option for boys from poor families
Washington Post	14 July 2002	General article and interviews	10,000 madrassas 1.5 million students Rapid growth in recent years	Resistance to Soviet Union; fighters for Kashmir; failure of public education system; social charity function
The Times	10 August 2002	Report	1.5 million students from poor rural families	Hard-line Islamic schools
L.A. Times	12 October 2002	Report	8,000 to 10,000 madrassas with 1.5 million students	
L.A. Times	2 February 2003	Interview with Foreign Minister Mian Khursheed Mehmood Kasuri		Madrassas reflect poverty of the state. Cater to poor people. Public educational system has failed
Financial Times	8 February 2003	General article and interviews	40,000 to 50,000 madrassas	None
L.A. Times	14 April 2003	Report	10,000 madrassas, educate 10% of all Pakistani students	Provide education for the poor; failures in public education system
Financial Times	19 August 2003	Expert comment		Most madrassas on border with Afghanistan. Concentrates on Pashtun belt.
Washington Post	2 September 2003	Report	None	Talks about madrassas in the Pashtun tribal belt

Source	Date	Type of study	Numbers	Reasons for Madrasa Enrollment
L.A. Times	5 March 2004	Report on politics regarding Musharraf	Madrassas are not the focus	Madrassas are not the focus
Washington Post	13 June 2004	General article and interviews	10,000 madrassas	Social safety net; Radical religious indoctrination
The Philadelphia Inquirer	15 June 2004	General article and interviews	8,000 madrassas	Afghan refugees moving into Pakistan

TABLE A2
DATA SOURCE DOCUMENTATION

Dataset	Year	Advantages	Disadvantages	Used for
PIHS	1991 1998 2001	Representative for 4 provinces that account for 97% of the population	Very low numbers for children enrolled in madrassas. The low numbers make it hard to study associations at the level of the household.	Representative numbers for madrassa enrollment in the 4 provinces over time.
PEIP	2000	Dataset on private schools, collected at the school level by the Federal Bureau of Statistics. Provides wealth of information on private schools, their location and enrollment.	No household level information and no information on madrassas. Age of enrolled children not available.	Size of private school enrollment. Often combined with 1998 Population Census in our analysis.
Population Census, Long Form	1998	Country wide coverage at the level of the district and region (rural/urban) excluding FATA.	Information is aggregated at the level of the district.	Numbers on country wide enrollment and geographical dispersion of madrassa enrollment in the country. Associations at the level of the district.
LEAPS Census	2003	Very recent data collected by the authors. Large number of children surveyed allows for flexibility in studying association between household attributes and schooling choice.	Very limited coverage—only 3 districts in Punjab. Limited household level information. Villages not representative of districts or country.	Presenting some recent numbers on madrassa enrollment. Associations at the level of the household.

TABLE A3
LEAPS MADRASSA ENROLLMENT ESTIMATES

Estimate Definition	Madrassa as Fraction of Enrolled
ATTOCK	
Conservative	0.0033
Moderate	0.0070
Liberal	0.0108
FAISALABAD	
Conservative	0.0033
Moderate	0.0069
Liberal	0.0116
RAHIM YAR KHAN	
Conservative	0.0213
Moderate	0.0367
Liberal	0.0583
TOTAL	
Conservative	0.0081
Moderate	0.0148
Liberal	0.0236

Source: LEAPS, 2003.

Note: Madrassa enrollment can be determined from several variables in the LEAPS dataset. Given data-entry and field errors, different estimates of madrassa enrollment can be obtained. Throughout this paper we use the moderate estimate. The conservative and liberal estimates should be viewed only as extreme lower and upper bounds.