

Spatial Inequities in Higher Education Admissions in Georgia: Likelihood of Choosing and Gaining Access to Prestigious Higher Education Institutions

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Abstract

The paper draws upon the findings of a mixed-methods study on spatial disparities in higher education access in Georgia. Examination of quantitative data on approximately 118,000 applicants, a purposive sample of households and policy-makers reveals geographic inequalities in university choice-making and student destinations. Multinomial logistic regression analysis of HE applicant first-choice HEIs, their general aptitude and residential origin shows that of two applicants with the same measured general aptitude, an applicant from a mountainous village is approximately 12 times more likely to apply to a least rather than a most prestigious HEI than an applicant from the capital. Qualitative evidence is used to explicate some aspects of the complex process of HE choice-making. Applicants and their families consider a number of factors like HEI location, cost of studies, prestige and availability of the desired programme when applying to tertiary education and selecting HEIs. Large differences are observed in applicant chances to enter prestigious HEIs by their residential origin. When controlling for prestige of first-choice HEIs, applicant measured aptitude and an array of other variables, applicants from mountainous villages are almost 8 times more likely to gain access to a least rather than the most prestigious HEI than applicants from the capital. International research shows that HEI quality is closely linked with higher probability of graduation, greater access to postgraduate studies and higher wage premium. It can be argued that rural students who apply and gain admission to less prestigious HEIs, may benefit from tertiary education to a lesser extent than urban students.

Introduction

This paper is concerned with two facets of HE access in Georgian reality - patterns of university choice-making and probability of gaining access to prestigious universities. These two aspects of HE access are examined via spatial lenses, by looking at the associations between rurality of higher education (HE)

applicants' residential origin, their priority choices of higher education institutions (HEIs), and university destinations in Georgia. I apply mixed-methods to the study of the quantitative data on approximately 118,000 applicants and some qualitative evidence from a purposive sample of households and policy-makers to establish academic higher education access inequities in Georgian settings.

The findings of this paper indicate that applicants who graduate from rural schools tend to apply and gain access to relatively less prestigious, i.e. less rigorous, HEIs than those applicants who graduated from urban schools. Some policy implications are discussed to argue that student financial support arrangements and the timings of university choice-making / public grant allocation need to be changed to facilitate more equitable outcomes in HE access in the Georgian context.

In different countries, applicants make HEI choices at different times in the process of HE application. In China, for instance, applicants choose HEIs after sitting examinations and familiarising themselves with correct answers to examination questions in each test. This is to allow for the self-assessment of test performance before making HEI choices.¹

Each HE applicant in Georgia establishes their choices of HEIs and programmes of study before sitting examinations, as part of the examination registration process. An applicant can gain admission to a single programme of study at an HEI included in their HE application; admission depends on applicant's competitive test scores. Applicant's scores are first ranked against all other applicants who named the same HEI/programme of study combination as their first choice. If applicant's test scores fall among the pre-defined number of top applicants that can be accepted to the specific HE programme, applicant's other choices are disregarded. If not successful, the scores are ranked consecutively against those who applied for every subsequent choice that the applicant has made. Thus, applicants do not face enrolment decisions, i.e. they do not receive admissions offers to choose from. Instead, they choose several HEIs before sitting the Unified National Examinations (UNEs) and receive an offer only for one of them, depending on their HE entrance examination scores.

International research shows that the quality of HEI is closely linked with higher probability of graduation, greater access to postgraduate studies, as well as higher wage premium. Considering this

¹ Chengfang Liu et al., "Early Commitment on Financial Aid and College Decision Making of Poor Students: Evidence from a Randomized Evaluation in Rural China," *Economics of Education Review* 30, no. 4 (2011): 627–640.

evidence, it can be suggested that those rural students who gain HE admission may enjoy the benefits of tertiary education to a lesser extent than urban students, since the former, on average, end up at lower quality HEIs than the latter. International literature on HEI choices is not extensive and, to the best of my knowledge, there is absolutely no literature on HEI selection process in the Georgian context (Table 1).

Table 1. Selected factors associated with university selection in Georgia and internationally

Factors	Georgian Context	International Context
HEI reputation/quality/selectivity		(Avery & Hoxby, 2003; Briggs, 2006; Connor, Burton, Pearson, Pollart, & Regan, 1999; Hawkins et al., 2008; R. James et al., 1999; Moogan & Baron, 2003; Price, Matzdorf, Smith, & Agahi, 2003; Whitehead, Raffan, & Deaney, 2006)
Availability of desired programme of study		(Connor et al., 1999; R. James et al., 1999; Maringe, 2006; Price et al., 2003; Whitehead et al., 2006)
Distance to HEI		(Briggs, 2006; Griffith & Rothstein, 2009; Hawkins et al., 2008; R. James et al., 1999; OECD & World Bank, 2009; Turley, 2009)
Labour-market motives/employability		(R. James et al., 1999; Maringe, 2006)
Family income		(Avery & Hoxby, 2003; Hawkins et al., 2008; Sutton Trust, 2008)
Cost of tuition/affordability/availability of financial aid		(Avery & Hoxby, 2003; Marince, 2006; McPherson & Schapiro, 1998; Mullen, 2010)

HEI selection process is increasingly viewed as consumer choice-making.² Literature shows that the process is complex and involves consideration of a number of factors. Judging from the scholarship overviewed for the purposes of this study (Table 1), the most obvious factors are HEI reputation, availability of desired programme of study, distance to HEI, and the cost of studies.

Distance to HEIs is considered to be a factor affecting HEI choices. Low income applicants are particularly prone to applying to HEIs nearby. Turley measures HEI proximity by the number of HEIs within the

² C Brown, P Varley, and J Pal, “University Course Selection and Services Marketing,” *Marketing Intelligence & Planning* 27, no. 3 (2009): 310–325, doi:10.1108/02634500910955227.

commuting distance from a potential applicant's home and discovers that for low income families residence in the vicinity of an HEI is associated with higher likelihood to applying to the nearby college.³ Internationally, for rural applicants in particular, distance to HEIs is a significant factor when making HEI choices as rural applicants are less likely to afford studying very far from home.⁴ Since in Georgia all HEIs are located in urban areas (Annex 1), urban applicants do have substantially more choices than rural applicants.

HEI quality is another aspect that is considered when making HEI choices. Common measures of quality in scholarly literature are inputs (expenses per student or faculty salaries) or peer quality, which is the same as prestige,⁵ as expressed by the average academic achievement/test scores of entering students.⁶ Internationally, applicants from disadvantaged backgrounds (e.g. ethnic minorities, rural residents, etc.) are considerably underrepresented at selective HEIs.⁷

Some studies introduce HEI selectivity variable when establishing the relationship between HEI choices and distance. Griffith & Rothstein use bivariate probit analysis to discover that, holding income and other characteristics equal, as the distance to the selective HEI increases applicants are less likely to apply to it.⁸

³ R Turley, "College proximity: Mapping access to opportunity," *Sociology of Education*, 82(2) (2009), 126–146. doi:10.1177/003804070908200202

⁴ OECD and World Bank, *Tertiary Education in Chile*, Review of national policies for education (Organisation for Economic Co-operation and Development, World Bank, 2009).

⁵The words selective, elite, rigorous are used as synonyms of the word prestigious.

⁶ D Black and J Smith, "How Robust Is the Evidence on the Effects of College Quality? Evidence from Matching," *Journal of Econometrics* 121, no. 1–2 (2004): 99–124, doi:16/j.jeconom.2003.10.006.

⁷ A Carnevale and S Rose, *Socioeconomic Status, Race/ethnicity, and Selective College Admissions* (The Century Foundation, 2003), ERIC,

<http://www.eric.ed.gov/ERICWebPortal/contentdelivery/servlet/ERICServlet?accno=ED482419>;

A Chevalier and G Conlon, "Does It Pay to Attend a Prestigious University?," *SSRN eLibrary* (2003), http://eprints.lse.ac.uk/19477/1/Does_it_pay_to_attend_a_prestigious_university.pdf;

OECD, *Tertiary Education for the Knowledge Society - OECD Thematic Review of Tertiary Education, Vol 1* (Paris: Organisation for Economic Co-operation and Development, 2008), http://oecd-conference-teks.iscte.pt/downloads/OECD_vol1.pdf;

X Yang, "Access to Higher Education for Rural-poor Students in China," *Educational Research for Policy and Practice* 9, no. 3 (2010): 193–209.

⁸ A Griffith & D Rothstein, "Can't get there from here: The decision to apply to a selective college," *Economics of Education Review*, 28(5) (2009), 620–628. doi:10.1016/j.econedurev.2009.01.004

Literature has looked at private returns associated with the attendance of selective HEIs. As indicated earlier, certain advantages are related to the attendance of a selective HEI, among them: higher probability of graduation, greater access to postgraduate studies, as well as higher wage premium.⁹

Students at selective universities in the US have higher graduation rates than those in less selective universities; graduation rates for the students from the top tier HEIs are 86% and from the lowest tier 54%.¹⁰ This effect persists even when controlling for student test scores. Scholars have difficulties in providing an empirical explanation of this finding – why would students of the same academic achievement be more likely to graduate at top tier HEIs than at lower tier institutions? It could be the case that the top tier institutions have high expectations about the performance of their students, attract students with higher expectations about their own performance, and/or have better support systems.¹¹

Graduates of selective universities in the US proceed to postgraduate education in larger proportions than those from less selective universities; postgraduate enrolment rates for the

⁹ J Brand and C Halaby, “Regression and Matching Estimates of the Effects of Elite College Attendance on Educational and Career Achievement,” *Social Science Research* 35, no. 3 (2006): 749–770;

Carnevale, A., & Rose, S. (2003). *Socioeconomic status, race/ethnicity, and selective college admissions*. The Century Foundation. Retrieved from

<http://www.eric.ed.gov/ERICWebPortal/contentdelivery/servlet/ERICServlet?accno=ED482419>

Chevalier, A., & Conlon, G. (2003). Does it pay to attend a prestigious university? *SSRN eLibrary*. Retrieved from http://eprints.lse.ac.uk/19477/1/Does_it_pay_to_attend_a_prestigious_university.pdf

J Monks, “The Returns to Individual and College Characteristics: Evidence from the National Longitudinal Survey of Youth,” *Economics of Education Review* 19, no. 3 (2000): 279–289;

L Morley and S Aynsley, “Employers, Quality and Standards in Higher Education: Shared Values and Vocabularies or Elitism and Inequalities?,” *Higher Education Quarterly* 61, no. 3 (2007): 229–249;

L Rivera, “Ivies, Extracurriculars, and Exclusion: Elite Employers’ Use of Educational Credentials,” *Research in Social Stratification and Mobility* (2011), <http://libsta28.lib.cam.ac.uk:2062/science/article/pii/S027656241000065X>.

¹⁰ Carnevale, A., & Rose, S. (2003). *Socioeconomic status, race/ethnicity, and selective college admissions*. The Century Foundation. Retrieved from

<http://www.eric.ed.gov/ERICWebPortal/contentdelivery/servlet/ERICServlet?accno=ED482419>

This article follows Barron’s measures when classifying colleges by selectivity: the median SAT I or median composite ACT entrance exam score; students’ high school class rank; students’ grade point average; and the percentage of students accepted. These measures are largely related to student academic achievement, similar to the prestige measure used in this study.

¹¹ Carnevale and Rose, *Socioeconomic Status, Race/ethnicity, and Selective College Admissions*.

graduates of the top tier HEIs are 35% and from the lowest third and fourth tiers - 15%.¹² This effect persists when controlling for student SAT scores.

Literature on the earnings premiums shows that when controlling for the academic qualifications, attendance of a very selective HEI is associated with 5-20% wage premium in the US.¹³ The UK evidence also supports the finding that average private returns from HE differ by the type of HEI attended, with earnings premium being substantially higher (in the range of 2% - 17%) for those attending more prestigious HEIs.¹⁴ In China, which is a developing country with a similar HE admissions system to Georgia, graduates of elite colleges enjoy 22.3% wage premium.¹⁵ Literature also shows that the wage premium effect of attending prestigious HEIs may stem from the quality of teaching as well as the network effect.¹⁶

Applicants also consider the following factors when making HEI choices: affordability/price/financial aid,¹⁷ easiness of getting from the HEI to home,¹⁸ HEI quality, availability of the preferred programme of study,¹⁹ employment rates for the selected HEI graduates (although most of the applicants seem to have only a vague understanding of these statistics).²⁰ There are also applicants, constituting a minority in the applicant pool, whose preferences for a particular HEI significantly overweighs the importance of the

¹² Ibid.

¹³ Ibid.

¹⁴ Chevalier, A., & Conlon, G. (2003). Does it pay to attend a prestigious university? *SSRN eLibrary*. Retrieved from http://eprints.lse.ac.uk/19477/1/Does_it_pay_to_attend_a_prestigious_university.pdf

¹⁵ L Hongbin et al., "Does Attending Elite Colleges Pay in China?" (2011), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1849523.

¹⁶ Chevalier, A., & Conlon, G. (2003). Does it pay to attend a prestigious university? *SSRN eLibrary*. Retrieved from http://eprints.lse.ac.uk/19477/1/Does_it_pay_to_attend_a_prestigious_university.pdf

¹⁷ C Avery and C Hoxby, "Do and Should Financial Aid Packages Affect Students' College Choices?," *National Bureau of Economic Research Working Paper Series* No. 9482 (2003), <http://www.nber.org/papers/w9482>;

M McPherson and M Schapiro, *The Student Aid Game: Meeting Need and Rewarding Talent in American Higher Education* (Princeton University Press, 1998);

F Mullen, *Barriers to Widening Access to Higher Education* (SPICe Information Centre, the Scottish Parliament, 2010), <http://www.scottish.parliament.uk/business/research/briefings-10/SB10-07.pdf>.

¹⁸ R James, G Baldwin, and C McInnis, *Which University? The Factors Influencing the Choices of Prospective Undergraduate Students* (Canderra: AGPS, 1999), <http://www.dest.gov.au/archive/highered/eippubs/99-3/whichuni.pdf>.

¹⁹ Ibid.

²⁰ Ibid.;

F Maringe, "University and Course Choice: Implications for Positioning, Recruitment and Marketing," *International Journal of Educational Management* 20, no. 6 (2006): 466-479.

availability of a specific programme, i.e. they are eager to gain access to any programme in the targeted HEI.²¹

Methodology

The mixed-methods design allows combining the breadth of numeric trends with details coming from the in-depth individual level exploration; it helps convey the voices of the disadvantaged as well as the selected policy-makers who can work for the improvement of university access opportunities for them. In this paper, I analyse quantitative data on approximately 150,000 HE applicants, a purposive sample of sixteen households and selected policy-makers to explain geographic inequalities in university choice-making in Georgia and to argue that applicant residential origin is associated with the selectivity of HEIs that they enter.

The major secondary data source is the UNE pooled data from four years – 2006-2009. Besides the National Examinations Center data on the Unified National Examinations, the data sources include: Georgian Social Service Agency, the Ministry of Education and Science, the National Statistics Office of Georgia. I also use different government documents in order to shed light on the selected policies and regulations.

The main variables used in the quantitative analysis are rurality of HE applicant residential origin and HEI prestige.

For the purposes of this study, prestige is the measure of university's academic rigour as proxied by average UNE scores of its student cohort. Before creating this variable, considerable preparatory work was completed to rank all Georgian HEIs by prestige. For the purposes of ranking HEIs by prestige, scores in all the three compulsory examinations for each applicant were summed up and an average sum of scores was calculated for each HEI. The mean scores were then ranked and prestige percentiles established: least prestigious (below 20th percentile), second least prestigious (20-40th percentile), medium prestige (40-60th percentile), second most prestigious (60-80th percentile), and the most prestigious (above 80th percentile).

²¹James, Baldwin, and McInnis, *Which University? The Factors Influencing the Choices of Prospective Undergraduate Students*.

The question predictor is the rurality of HE applicant area of origin. This variable specifies the rurality of the area where an applicant graduated from a secondary school. I combined the data from two sources to construct this variable: the UNE data on general schools that each applicant graduated from²² and the MES database on general school location in Georgia.²³

I use five-category, three-category and two-category rurality variables, as required in the analysis. The binary one classifies applicants into rural and urban. The three-category variable differentiates applicants from the capital from rural mountainous school graduates, bringing the rest together in the middle category. The five-category variable classifies applicants in greater detail – from mountainous villages, villages, towns, big cities, and the capital. The categorisation process is broadly based on the government-approved classification of general schools by location - urban, rural and mountainous rural schools.²⁴ My coding for rural and mountainous rural exactly follows the government classification. Since these used to be the recognised categories for voucher financing, my variable coding coincides with the data provided in the MES school location dataset.²⁵

However, there is a more complex task to be performed when differentiating schools under the urban category into the capital, big cities, and towns. As I have mentioned above, this category is subdivided into three for a higher level of precision. Although the capital is easily distinguishable, differentiation between big cities and towns requires establishment of a threshold between the two types of urban settlements. The National Statistics Office of Georgia Yearbooks data is used to separate six biggest cities from the rest of the urban areas.²⁶ I put all urban centres on the common scale by the number of residents (Annex 4). Out of 53 urban centres, I distinguished six biggest cities (Kutaisi, Batumi, Rustavi, Zugdidi, Gori, Poti) with the population over 47 000 and left all other towns in the town category. I take 47 000 as the cutting point as this threshold seems logical considering the country's socio-demographic and economic features. Also, the difference between the least populous big city (Poti with 47 500 residents)

²² National Examinations Center, "The Unified National Examinations Database," 2009.

²³ Ministry of Education and Science of Georgia, *EMIS Data on Secondary Schools and School Graduates* (Tbilisi: Ministry of Education and Science of Georgia, 2009).

²⁴ Government of Georgia, "Ordinance 246" (Government of Georgia, 2007), http://www.government.gov.ge/index.php?lang_id=GEO&sec_id=95&info_id=2534.

²⁵ Ministry of Education and Science of Georgia, *EMIS Data on Secondary Schools and School Graduates*.

²⁶ GeoStat, *Statistical Yearbook of Georgia 2009* (Tbilisi, Georgia: National Statistics Office of Georgia, 2009), www.geostat.ge.

and the most populous town (Samtredia with 29 600 residents) is proportionally much larger than any differences between adjacent towns on the scale below Samtredia (Annex 4).

Rurality is a composite, multidimensional construct; it refers to some distinct but interrelated dimensions which I treat as a single theoretical concept. This construct brings together a number of educational, socio-economic, and cultural (dis)advantages which applicants from different types of localities face. There has been a debate between the advocates and critics of multidimensional construct utilisation. Opponents argue that such constructs are ambiguous and explain less variance in the outcome than would have been explained by including the different components of the construct separately in the model.²⁷ On the other hand, proponents maintain that multidimensional constructs are excellent for the purpose of holistic representation of complex phenomena; also, such constructs help explain larger variance in the outcome.²⁸ I use the multidimensional construct as I am inherently interested in establishing the cumulative detrimental impact of residential origin. It would have been useful to model relationships using the components of this construct separately and to compare the two models. This is, however, impossible because of the unavailability of multi-level data.

²⁷ D Gerbing and J Anderson, "An Updated Paradigm for Scale Development Incorporating Unidimensionality and Its Assessment," *Journal of Marketing Research* 25, no. 2 (1988): 186–192;

J Hattie, "Methodology Review: Assessing Unidimensionality of Tests and Items," *Applied Psychological Measurement* 9, no. 2 (1985): 139–164;

G Johns, "Aggregation or Aggravation? The Relative Merits of a Broad Withdrawal Construct," *Journal of Organizational Behavior* 19, no. 5 (1998): 453–462;

S Paunonen, M Rothstein, and D Jackson, "Narrow Reasoning About the Use of Broad Personality Measures for Personnel Selection," *Journal of Organizational Behavior* 20, no. 3 (1999): 389–405;

R Schneider, L Hough, and M Dunnette, "Broad-sided by Broad Traits: How to Sink Science in Five Dimensions or Less," *Journal of Organizational Behavior* 17, no. 6 (1996): 639–655.

²⁸ K Hanisch, C Hulin, and M Roznowski, "The Importance of Individuals' Repertoires of Behaviors: The Scientific Appropriateness of Studying Multiple Behaviors and General Attitudes," *Journal of Organizational Behavior* 19, no. 5 (1998): 463–480;

C Hulin, "Adaptation, Persistence, and Commitment in Organizations," in *Handbook of Industrial and Organizational Psychology*, ed. M Dunnette and L Hough, 2nd ed. (Palo Alto: Consulting Psychologists Press, 1991), 445–505;

D Ones and C Viswesvaran, "Bandwidth–fidelity Dilemma in Personality Measurement for Personnel Selection," *Journal of Organizational Behavior* 17, no. 6 (1996): 609–626;

M Roznowski and K Hanisch, "Building Systematic Heterogeneity into Work Attitudes and Behavior Measures," *Journal of Vocational Behavior* 36, no. 3 (1990): 361–375.

Findings

HEI choice-making

How do university aspirants make their choices of higher education institutions in Georgia? Do they base their choices solely on their professional aspirations or are they largely driven by pragmatic considerations? Harvard University President talks about parking space theory of life in her address to a graduating class:

Don't park six blocks away from your destination because you are afraid you won't find a closer space. Go to where you want to be. You can always circle back to where you have to be. You can discover, sometimes improbably, a new version of who you are.²⁹

Interviews with rural families in selected districts demonstrated that applicants rarely take a risk of naming institutions where they want to be as their first choices on the HE application form. Instead, university choice-making is a complex process of weighting a number of factors like HEI location (distance to home, cost of living), cost of studies, HEI prestige, and availability of the desired programme. Cross tabulations of first-choice prestige vs. the rurality of the area where applicants graduated from a secondary school are provided in Figure 1.

The demand for the most prestigious HEIs increases as we move from mountainous villages to more urban areas. 26% of rural mountainous applicants and 46% of the applicants from the capital name an HEI above 80th percentile as their first choice. In contrast, the lowest quality HEIs (below 20th percentile) are named by 2% of applicants from Tbilisi and 21% from mountainous villages.

²⁹ D Faust, "Class of 2011 Baccalaureate Address: 'A Syncopated Life'" (presented at the Graduation ceremony of class 2011, Harvard University, 2011), http://president.harvard.edu/speeches/faust/110524_bacc.php.

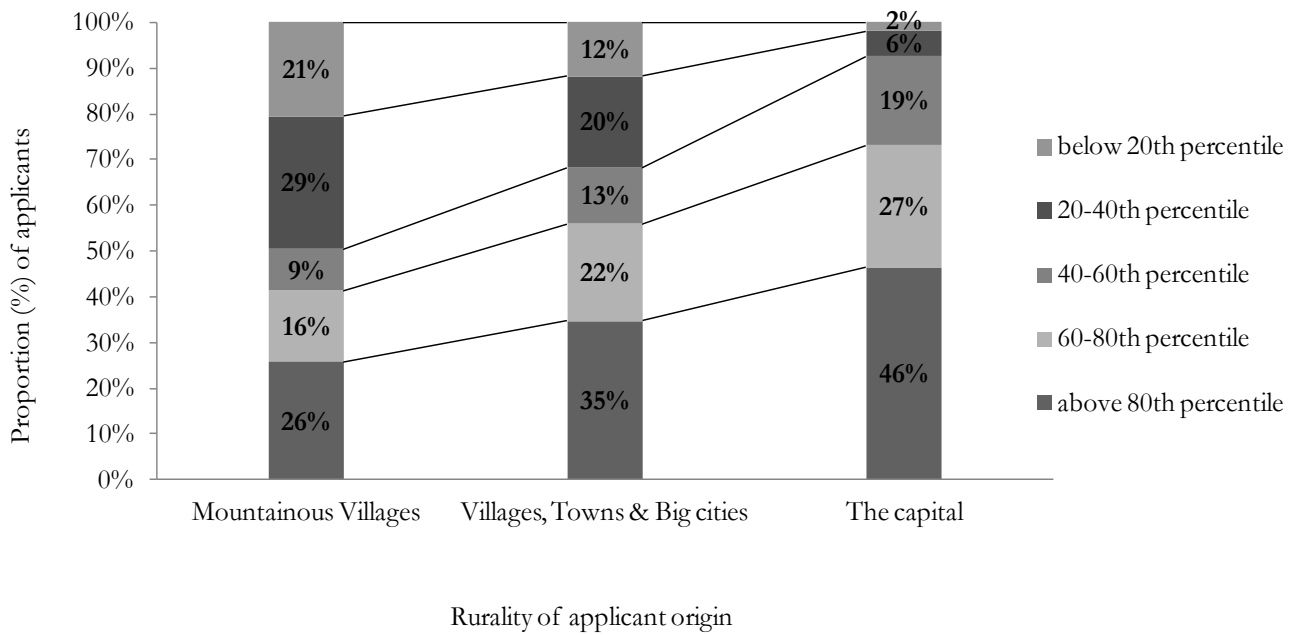


Figure 1. First choice HEI prestige by applicant area of origin

Multinomial logistic regression was conducted to estimate the degree to which naming of HEIs of different prestige as first choice is predicted by applicant area of origin, when controlling for applicants' general aptitude (Table 2). Population groups who named a least prestigious (below 20th percentile), second least prestigious (20-40th percentiles), medium prestige (40-60th percentiles) and second most prestigious (60-80th percentiles) HEIs were compared to those who named a most prestigious HEI (above 80th percentile). Multinomial logistic regression estimates the probability of membership in each category of the dependent variable. So, in our five category case, the focus is on the probability of naming the least prestigious, second least prestigious, medium prestige and second most prestigious HEIs vs. the most prestigious one as applicant's first choice. Thus, the reference category for the dependent variable is the group of most prestigious HEI, and the reference category for the main predictor is the group of applicants from the capital. Table 2 presents the odds ratios for the contrasts by HEI prestige categories. Overall, the full model fits the data well. The change in the likelihood ratio test is significant ($\chi^2=2.82$, $p=.000$), which indicates that our final model is significantly better than the intercept-only model. The association is of medium strength (Nagelkerke $R^2=.226$).

The results of the multinomial logistic regression (Table 2) indicate that applicants with higher general aptitude tend to have consistently higher odds of applying to the most rigorous HEIs. Of two applicants with the same measured general aptitude, however, an applicant from a mountainous village is approximately 12 times more likely to apply to a least rather than a most prestigious HEI than an

applicant from the capital. An applicant from a town or a village with the same measured general aptitude as an applicant from the capital is 5-6 times more likely to apply to a least rather than a most prestigious HEI. An applicant from a mountainous village is around 6 times more likely to apply to a second least prestigious rather than a most prestigious HEI, as compared to an applicant from the capital. The odds for villagers and town residents are also very high to apply to a least or second least prestigious HEI instead of applying to a most prestigious one, when compared to the odds of a Tbilisi resident (Table 2).

Table 2. *Multinomial Regression Modelling of the First-Choice HEI Prestige*

Predictors	Least prestigious (below 20 th percentile) compared to most prestigious (above 80 th percentile)		Second least prestigious (20- 40 th percentile) compared to most prestigious (above 80 th percentile)		Medium prestige (40-60th percentile) compared to the most prestigious (above 80th percentile)		Second most prestigious (60- 80th percentile) compared to most prestigious (above 80th percentile)	
	B	Exp(B)	B	Exp(B)	B	Exp(B)	B	Exp(B)
Intercept	-.30***		0.36***		1.277***		1.04***	
Mountainous villages	2.51***	12.34	1.87***	6.48	-0.52***	0.59	-0.19***	0.82
Villages	1.87***	6.47	1.35***	3.86	-0.35***	0.70	-0.09***	0.91
Towns	1.64***	5.13	0.92***	2.5	-0.27***	0.76	-0.02	0.98
Big cities	2.34***	10.34	1.96***	7.11	-0.33***	0.72	0.03	1.03
GAT	-.06***	0.94	-0.05***	0.95	-0.04***	0.96	-0.03***	0.97

* p<.05, ** p<.01, *** p<.001

Interpretation note: odds of choosing an HEI in the given category of prestige, as compared to the most prestigious ones, are equal if Exp(b) is 1.00, greater if it is more than 1, and less if it is less than 1. For example, applicants from mountainous villages are more likely to choose a least prestigious HEI than a most prestigious one.

The reference category for the dependent variable is the group of most prestigious HEI, and the reference category for the main predictor is the group of applicants from the capital.

Thus, applicants who have not graduated from a secondary school in the capital tend to consistently name the least and the second least prestigious HEIs as their first choice most frequently. However, they tend to favour the most prestigious ones over the second most prestigious and the medium prestige universities. This evidence, namely the second part of it, is somewhat counterintuitive. Table 3 may shed some light on this finding.

Table 3. Higher Education Institutions by Prestige and Location

HEI ranking by prestige	% located in the capital	% located outside the capital
Most prestigious HEIs	100	0
Second most prestigious HEIs	100	0
HEIs of medium prestige	100	0
Second least prestigious HEIs	84	16
Least prestigious HEIs	35	65

As seen in Table 3, all HEIs in the categories of most prestigious, second most prestigious and the medium prestige are located in the capital. However, the statistics change as we move down the ladder of prestige; 84% of all second least prestigious and only 35% of the least prestigious HEIs are in Tbilisi. It can, therefore, be hypothesised that applicants from outside the capital favour the last two categories the most since they tend to be located outside the capital and, possibly, closer to home. However, when it comes to the selection between the first three categories, which are all located in Tbilisi, i.e. away from their homes, they tend to name the most prestigious HEIs instead of the second most prestigious and medium prestige. In other words, the main choice applicants seem to be facing is between HEIs in the capital and outside the capital. For those who decide to name a Tbilisi-based HEI as their first choice, it seems to be worth to apply to the best among the available HEIs in Tbilisi, whereas those who cannot name a Tbilisi HEI as their first choice are left with the least prestigious categories.

The finding on significant associations between the rurality of residence and prestige of first-choice HEI needs to be discussed in the context of the interplay between tuition costs, HEI location, and their prestige rankings. More prestigious HEIs charge higher tuition rates and also require higher living expenses from those students who do not reside in the capital as all prestigious HEIs are located in Tbilisi. Statistical analysis of average tuition rates by HEIs shows that universities of higher prestige charge significantly higher tuition than HEIs of relatively low prestige (*Figure 2*). Average tuition at a most prestigious HEI is \$2515 whereas at a least prestigious HEI - only \$928.³⁰ Analysis of average tuition rates by HEI location shows that there are significant differences in tuition among HEIs in towns, big cities and the capital. Average tuition in an HEI in a town is \$717 whereas average tuition in the capital is \$1231 (*Figure 3*).

³⁰ Georgian national currency GEL is converted to USD based on the exchange rates in mid-2007: 1 USD = 1.67GEL. National Bank of Georgia, "Exchange Rates of GEL and Foreign Currencies in 2007," 2007, www.nbg.ge.

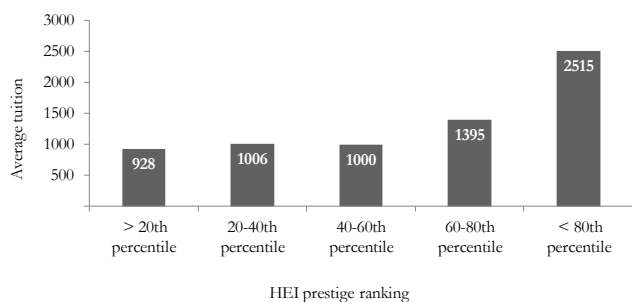


Figure 2. Average tuition by HEI prestige

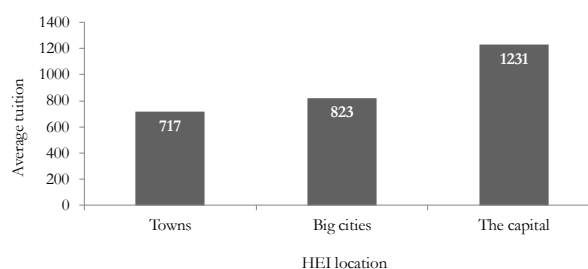


Figure 3. Average tuition by HEI location

Thus, Tbilisi-based universities are more prestigious and more expensive than universities operating in other urban areas of Georgia. It can, therefore, be hypothesised that applicants from outside the capital favour HEIs in the last two categories of prestige the most since they tend to be located outside the capital, and possibly closer to their homes, charging less for tuition and costing less in terms of maintenance. Living costs are dramatically different for those who study within the commuting distance from their homes and for those who need to relocate in order to attend an HEI. Annex 1 shows the distribution of HEIs in Georgia. All of the HEIs are located in urban areas and some regions do not have a single HEI in the vicinity. This map demonstrates that commuting to an HEI from home is an option for those who live in Tbilisi, Kutaisi, Batumi, Poti, Gori, Akhaltsikhe, Zugdidi, Rustavi cities and the villages within the commuting distance. Students from the rest of the country need to relocate to these cities in order to attend a university.

None of the accredited HEIs in Georgia has a student accommodation or any student support to cover living expenses.³¹ The minimum cost of living in Tbilisi would have been approximately \$1360 per academic year in 2007. The calculation is based on monthly subsistence minimum of \$64 for food,³² \$60 for room and bills, \$12 for transport, multiplied by 10 months. For an average rural adult in Georgia, this was equivalent to the average cumulative income for up to three years. According to the LSMS 2007 data,

³¹ Ministry of Education and Science of Georgia, “Personal communication with the Head of Higher Education Office at the MES on the provision of students with accommodation or living expenses coverage,” July 18, 2011.

³² Geostat, *Data on Subsistence Minimum* (Tbilisi, Georgia: National Statistics Office of Georgia, 2007), http://geostat.ge/index.php?action=page&p_id=179&lang=eng.

average monetary incomes in rural areas amounted to only half of average incomes in urban areas and equalled approximately \$40 per month per rural adult.³³

Most of the interviewed families talked about very high levels of poverty in the villages where they lived. I interviewed sixteen families in four districts of Georgia. Purposive selection technique was used to identify districts. As part of the district selection process, I regressed district poverty rates on district admission ratios to identify those districts which had higher / lower proportions of applicants gaining HE access than would have been expected considering their poverty levels (Annex 3). In other words, I specified those districts which represent positive and negative exceptions based on the regression analysis results. On average, those districts with higher levels of poverty have lower admissions ratios. For the purposes of qualitative analysis, I was interested in the variation in admission ratios only for relatively poor districts. All the districts on and above the 90th percentile of the distribution, i.e. the top 10% are assumed to be the poorest. There are eight such districts. In each of these poorest 10% of districts, 28.4% or more of the population is poverty allowance recipient (Annex 3). Instead of looking at all of the eight districts, however, I decided to avoid the four poorest districts in the country and focus on the next four within the top 10%.³⁴ The four selected districts are largely rural. They are all located in western Georgia as seen on the map (Annex 2). Three - Chiatura, Oni and Khulo - out of the four districts being qualified by the government as high mountainous for the purposes of general school financing.

In each district I interviewed two families whose members gained university access through the UNEs and two families whose members failed to gain access. Participants were selected using a random walk sampling technique. Upon arriving in the first village of the district, I chose the first person I encountered and explained to them the purpose of my visit, asking them to point to families which complied with the requirements of my study – family-member should have participated in the UNEs. The first village in each district was the closest village to the central highway and, possibly, one of the most privileged in the

³³ Oleksiy Ivaschenko and Aleksandra Posarac, *Georgia Poverty Assessment* (Human Development Sector Unit South Caucasus Country Unit Europe and Central Asia Region, 2008).

³⁴ The poorest four have been avoided as looking at the poorest four districts in the country would possibly produce extreme results and would resemble an exercise in outlier examination. Also, the next four districts (Khoni, Chiatura, Oni, and Khulo) have similar proportions of the poor but different HE admissions ratios. Chiatura and Khoni have higher admission ratios than would have been expected considering their poverty rates; Oni and Khulo have lower admission ratios than would have been expected considering the proportion of the poor in these districts.

district in terms of having the easiest access roads and transportation. Upon completing each interview, I would continue walking and engage in conversation with the next person I met.

Considering high poverty levels in the four districts where I conducted interviews, attending a university close to home and having lower tuition costs has been established as very important factors for rural applicants when making HEI choices.

Some disadvantaged child from Khulo [a high mountainous district] will not apply to Tbilisi HEIs; s/he will apply to a nearest HEI. People are reasonable. Why do you think a disadvantaged, disabled child from some terrible family in a mountainous village shall have a desire to study at a prestigious HEI in Tbilisi?! They will never have such a desire because they were brought up in families that are not well-off and possibly nobody from the family attended HEI. They will, however, have enough power of reasoning to understand that Batumi [a big city near Khulo] is more accessible than Tbilisi.³⁵

The Deputy Minister takes it for granted that a rural applicant, who is typically disadvantaged, disabled and comes from a terrible family (sic), would instinctively go for a local HEI rather than Tbilisi. In the circumstances where no maintenance grant is available to any student in the country, rural applicants who are more likely to be poor, would most probably face serious financial considerations before naming one of the most prestigious HEIs as their first choice. Interviewed rural families confirmed this hypothesis. Most of the interviewed families seem to have considered tuition and maintenance costs as major factors when making HEI choices. For example, a mother of a student who gained admission to non-prestigious HEI outside the capital says that sending her daughter to Tbilisi would cost much more than supporting her in Kutaisi.³⁶ In other words, the young lady was denied the opportunity of applying to more prestigious HEIs in Tbilisi because of purely financial reasons. As noted by the Deputy Minister of Education:

Even if an applicant from Khulo [a high mountainous district] gains access to one of the most prestigious HEI, where the tuition is up to \$8982, will s/he be able to afford the payment? So what? What is the purpose of them applying to the most prestigious HEIs?³⁷

Five out of the six most prestigious HEIs are private which means that they are allowed to charge much higher tuition than public HEI average. Under the centralised system of admissions, differences between

³⁵ Deputy Minister, Interview with the Deputy Minister of Education and Science of Georgia, 2010.

³⁶ Chiatura 1, In-depth interview with Chiatura 1 family: Admitted applicant, 2010.

³⁷ Deputy Minister, Interview with the Deputy Minister of Education and Science of Georgia.

public and private HEIs in terms of access are negligible. In order to show how public HEIs differ from private universities when it comes to tertiary access, two modes of government involvement in private HE access policies need to be explained. First, the Georgian government takes charge of selecting students for private HEIs in the same unified manner as for public HEIs. This is an unusual policy when compared to OECD countries.³⁸ Second, the Georgian government subsidises not only public but also privately-owned HEIs, by allowing students who obtain public tuition grants to cover their fees in any accredited HEI. Because of these two features related to admissions and financing, the major difference between public and privately-owned HE providers in terms of equitable access lies solely in tuition rates. Whereas public providers are required to set fees within the limit established by the government, private providers set their own tuition rates. For comparison, whereas public HEIs were not allowed to charge more than \$1347 per year in 2009, one of the most prestigious private universities charged \$8922 per year.³⁹ The amount of the maximum grant was \$898 in 2005-2008 and \$1347 in 2009.⁴⁰ Since admissions and per student public grant distribution mechanisms are identical for public and private HEIs in the Georgian context, in the present study no special attention is paid to the ownership type of HEIs. Instead, I focus on tuition amounts at different HEIs for specific programmes of study. Tuition amount, as explained in this paragraph, is the only difference between private and public providers when it comes to access.

I recorded another applicant story in Khulo, the very district mentioned by the Deputy Minister in the interview quote. This applicant gained access to an HEI in a big city [Batumi] which is closer than Tbilisi to her village. She said that she had a great desire to study in a more prestigious HEI in Tbilisi but knew

³⁸ In most of the OECD countries, private HEIs are allowed to establish admissions criteria on their own. In some cases, private HEIs need to align these criteria with national requirements, as it happens in China, Korea, New Zealand, Poland, Portugal and Switzerland or follow government regulations and supplement them with their own criteria, as is the case in certain fields of study in Norway OECD, *Tertiary Education for the Knowledge Society - OECD Thematic Review of Tertiary Education, Vol 1.*

³⁹ NAEC. (2009). The Unified National Examinations database.

⁴⁰ NAEC. (2006). The Unified National Examinations information booklet. National Examinations Center. Retrieved from www.naec.ge

NAEC. (2007). The Unified National Examinations information booklet. National Examinations Center. Retrieved from http://www.naec.ge/files/492_Saregistracio-Gazeti-2007.pdf

NAEC. (2008). UNE information booklet. Retrieved from www.naec.ge

NAEC. (2009). The Unified National Examinations information booklet. National Examinations Center. Retrieved from www.naec.ge

that her family would not have been able to afford the costs associated with the residence in the capital, therefore, she did not even name any more prestigious HEIs on her application.⁴¹

In those cases when applicants from interviewed families named relatively prestigious HEIs in Tbilisi, they hoped to find shelter with relatives residing in the capital.⁴²

The choices of HEI and programme combinations are made at the time of applying to HE, before the applicants sit the UNEs. Such an early timing of decision-making, as it emerged from the interviews, puts marginal applicants at a disadvantage. Rural families talked about the difficulty of making the right prognosis of the applicant UNE achievement, the trend of naming low calibre HEIs as more “realistic” options and missing chances of entering prestigious ones. In the existing reality of having to make choices upfront, the interviewed families talked about a number of factors they consider in this process: HEI location (distance to home, cost of living, attractiveness), cost of studies, prestige, and availability of the desired programme. Except a single applicant from Khoni, all others in the interviewed families discussed their choices with one or more parties: family members, private tutors, school teachers, and classmates.

The head of NAEC maintains that an annual examinations booklet they produce contains all the necessary information and suggestions for applicants. She says her office arranges meetings all over the country to interact with applicants and answer their questions.⁴³ Interestingly, none of the families I talked with mentioned NAEC staff visits and meetings with them as a source of information. Most of them did, however, mention the annually updated UNE booklet.

Interviews with rural families revealed that in the families where mother had higher education, she has been the largest influence on applicant’s choice-making. This has been true for all the three families in my sample where mothers happened to have HE.⁴⁴ Young people from these three families were successful in gaining admission to HE. This finding is not surprising considering the vast literature on the importance of mother’s education on children’s educational aspirations, achievement, and attainment.

⁴¹ Khulo 1, In-depth interview with Khulo 1 family: Admitted applicant, 2010.

⁴² Chiatura 2, “In-depth interview with Chiatura 2 family: Failed applicant”, 2010;
Chiatura 3, “In-depth interview with Chiatura 3 family: Failed applicant”, 2010;
Oni 1, “In-depth interview with Oni 1 family: Admitted applicant”, 2010.

⁴³ Head of National Examinations Centre, Interview with the head of the National Examinations Center, 2010.

⁴⁴ Khulo 2, “In-depth interview with Khulo 2 family: Admitted applicant”, 2010;
Oni 3, “In-depth interview with Oni 3 family: Admitted applicant”, 2010;
Oni 4, “In-depth interview with Oni 4 family: Admitted applicant”, 2010.

Interestingly, one of the successful applicants' mother maintained that school teachers rather than the family can be the best source of information / suggestions related to HEI / programme choices.⁴⁵ Being a teacher herself, she insisted that schools are the only educational and cultural centres in villages and, therefore, the best sources of advice related to HE. The only piece of information not available to a teacher, she said, is the financial status of the family; pupils should be open about their family finances if they want a workable advice from a teacher.⁴⁶ A student from another family who was taught by this teacher admits that the school provided the best possible support to her; she remembers that the entire class would sit together, work on choices and then agree them with teachers.⁴⁷ These were the two families which talked about the role of teachers in HE choice-making positively and seemed to present exceptional rather than ordinary cases of support.

"I asked all my questions related to choices of university programmes to my tutors; I really do not remember such conversations with school teachers at all," remembers a successful applicant.⁴⁸ Other subjects had similar recollections, maintaining that school teachers were not informed at all to provide any advice. One of the students recollects:

Teachers at my school did not have answers to my and my classmates' questions. I remember they would respond to our questions; we could not, however, really figure out what they were telling us... I think it was the mistake in choice making that resulted in my failure last year. But I gained experience in the process of selecting programmes of study at the right HEIs and was more successful in making right choices this year!⁴⁹

An aunt of an unsuccessful applicant says that her nephew did not even ask teachers any questions when making choices as they did not expect that teachers would have any suggestions. People in the rural areas are totally uninformed when it comes to the UNEs, she says.⁵⁰ The aunt thinks her nephew should not have selected the business degree at all and should have chosen something less competitive. Even after graduating from a less competitive programme, a person can start his own business, she says. However, the failed applicant does not agree with his aunt; he thinks it was right to put the business programme that he truly desired to study as his first choice. The mother and aunt say that they had no one to ask

⁴⁵ Khulo 2, "In-depth interview with Khulo 2 family: Admitted applicant", 2010;

⁴⁶ Ibid.

⁴⁷ Khulo 1, In-depth interview with Khulo 1 family: Admitted applicant.

⁴⁸ Chiatura 4, In-depth interview with Chiatura 4 family: Admitted applicant, 2010.

⁴⁹ Chiatura 1, "In-depth interview with Chiatura 1 family: Admitted applicant," 2010.

⁵⁰ Chiatura 2, "In-depth interview with Chiatura 2 family: Failed applicant," 2010.

about the differences between different HEIs and programmes and the expected competition for each of them.⁵¹ This young man did not even have a proper private tutor to ask for an advice. All those interviewees who had private tutors asked them for assistance when making choices.⁵²

The former head of the National Curriculum and Assessment Centre admits that sources of information and advice do differ for villagers and city-dwellers:

Applicants from the capital are definitely privileged in terms of being more informed when it comes to making choices. If they find no other source of information, they can easily visit the NAEC office in Tbilisi and get some advice there. In rural areas, mostly private tutors are providing some support in this respect.⁵³

Support from the side of the school is not a big issue from the perspective of the Deputy Minister of Education and Science who is directly responsible for the HE in Georgia; he maintains that the printed booklet annually produced by the NAEC contains all the relevant information: “booklets are distributed to ERCs and then to schools. A person who reads this publication and does not understand what it says shall not try to access HE.”⁵⁴ When asked whether schools in Georgia develop pupil literacy to the degree that they can fully understand what the publication says, he responded:

⁵¹ Ibid.

⁵² Private tutoring has been perceived as an effective way of supplementing formal schooling in Georgia as well as in wider Caucasus OSI, *Education in a Hidden Marketplace: Monitoring of Private Tutoring. Overview and Country Reports*. (New York: Education Support Program of the Open Society Institute Network of Education Policy Centers, 2006), http://www.edupolicy.net/images/old/166_education-in-a-hidden-marketplace-highres.pdf. The OSI (2006) survey indicated that 80% of the sample from Georgia used private tutoring as a supplement to formal schooling. An empirical study of students from Gori district of Georgia revealed that private tutoring is associated with higher achievement at the UNEs, when controlling for the school location, gender, family income, parent employment status, school attendance K Darakhvelidze, “The University Entrance Examinations: The Effect of Admissions Test Preparation on Private Tutoring in Georgia” (master’s thesis, Columbia University, 2008).. Through qualitative interviews with HEI entrants in Georgia, Gorgodze (2006) found that the following are the main reasons for applicants to decide on hiring a private tutor: through tutoring classes they can organise their thoughts better, they cannot think of passing the UNEs without private lessons as everybody else is taking such additional preparatory classes, they feel more at ease to ask questions to a private tutor rather than a school teacher, and have more time for discussions at private lessons. Gorgodze (2006) also established that private tutors are more widely available in the capital than in other parts of Georgia, especially when it comes to foreign language tutors.

⁵³ Former Head of National Curriculum and Assessment Centre, Interview with the former head of the National Curriculum and Assessment Centre, September 14, 2010.

⁵⁴ Deputy Minister, “Interview with the Deputy Minister of Education and Science of Georgia,” 2010.

You know if person cannot understand what s/he reads on paper, HE is not for them. They won't be able to study. Why shall we make them suffer in vain? Imagine that you are sent to a Chinese class without any prior preparation. Will you benefit from it?⁵⁵

The head of NAEC, however, talks about logistic problems in terms of the booklet delivery to all remote areas. "Unfortunately, there are cases when applicants cannot familiarise themselves with this publication, as it does not reach them. We distribute publications to ERCs who are responsible for the distribution of publication in schools."⁵⁶

Thus, the NAEC annual informational booklet is designed to be the major source of information when it comes to selecting HEIs and programmes. Also, NAEC employs staff visits to regions as a way to spread the information and provide the necessary support to applicants. Some of the interviewed families seem to have familiarised themselves with the information booklet. However, very few have mentioned that they participated or heard of the NAEC visit to their district. Families, private tutors, and teachers at school seem to be providing some advice to applicants when it comes to HE decision-making. Since most of the interviewed families did not have any family member with HE, the quality of such advice may be questionable. As mentioned above, two interviewees who attended the same school maintained that the school was supportive. None of the other participants have maintained the same. Finally, private tutors seem to have been the most active providers of necessary advice.

University destinations

In this section, I examine associations between applicant residential origin and admission to different types of HEIs. I choose two perspectives when looking at this question. First, how gaining access to the first-choice HEI is related to applicant residential background and second, whether applicants from different residential backgrounds enter HEIs of varying prestige and what implications may stem from this finding. These two perspectives are rooted into different epistemological approaches – whereas the first one focuses on the value inherent in applicants' individual choices, the second is founded on empirical evidence-based judgement regarding relative merits of HEIs and benefits associated with attendance of relatively more prestigious HEIs.

⁵⁵ Ibid.

⁵⁶ Head of NAEC, "Interview with the head of the National Examinations Center,"2010.

Gaining access to the first-choice HEI may be viewed as important in terms of pursuit of valued freedoms. It links lifetime opportunities with a chance to study at a place of one's priority choice. If there exist differences by residential origin in opportunities of getting admitted to first-choice HEIs, we will maintain that chances of pursuing freedoms differ by applicant residential background.

As explained earlier, the first-choice HEI is usually established after considering a number of constraints besides applicant's personal conditions and professional interests: HEI location (distance to home, cost of living, and attractiveness), cost of studies, and prestige. Access to a relatively prestigious/high quality HEI tends to be associated with better lifetime opportunities in terms of higher probability of graduation, greater access to postgraduate studies, as well as higher wage premium.⁵⁷

Cross-tabulation analysis was conducted to detect differences in the proportions of students who gain access to their first-choice HEIs by rurality of the area where they graduated from a general school. As seen in Figure 4, there exist some differences in the proportions of students from various geographic backgrounds who entered their first-choice HEIs. These differences range from 45% for students from the capital and big cities to 38% for students from the rest of the country. Thus, higher proportions of the capital and big city residents gain admission to their priority choice HEIs, as compared to the destinations of residents from other areas.

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- ⁵⁷ J Brand and C Halaby, "Regression and Matching Estimates of the Effects of Elite College Attendance on Educational and Career Achievement," *Social Science Research* 35, no. 3 (2006): 749–770;
- Carnevale, A., & Rose, S. (2003). *Socioeconomic status, race/ethnicity, and selective college admissions*. The Century Foundation. Retrieved from <http://www.eric.ed.gov/ERICWebPortal/contentdelivery/servlet/ERICServlet?accno=ED482419>
- Chevalier, A., & Conlon, G. (2003). Does it pay to attend a prestigious university? *SSRN eLibrary*. Retrieved from http://eprints.lse.ac.uk/19477/1/Does_it_pay_to_attend_a_prestigious_university.pdf
- J Monks, "The Returns to Individual and College Characteristics: Evidence from the National Longitudinal Survey of Youth," *Economics of Education Review* 19, no. 3 (2000): 279–289;
- L Morley and S Aynsley, "Employers, Quality and Standards in Higher Education: Shared Values and Vocabularies or Elitism and Inequalities?," *Higher Education Quarterly* 61, no. 3 (2007): 229–249;
- L Rivera, "Ivies, Extracurriculars, and Exclusion: Elite Employers' Use of Educational Credentials," *Research in Social Stratification and Mobility* (2011), <http://libsta28.lib.cam.ac.uk:2062/science/article/pii/S027656241000065X>.

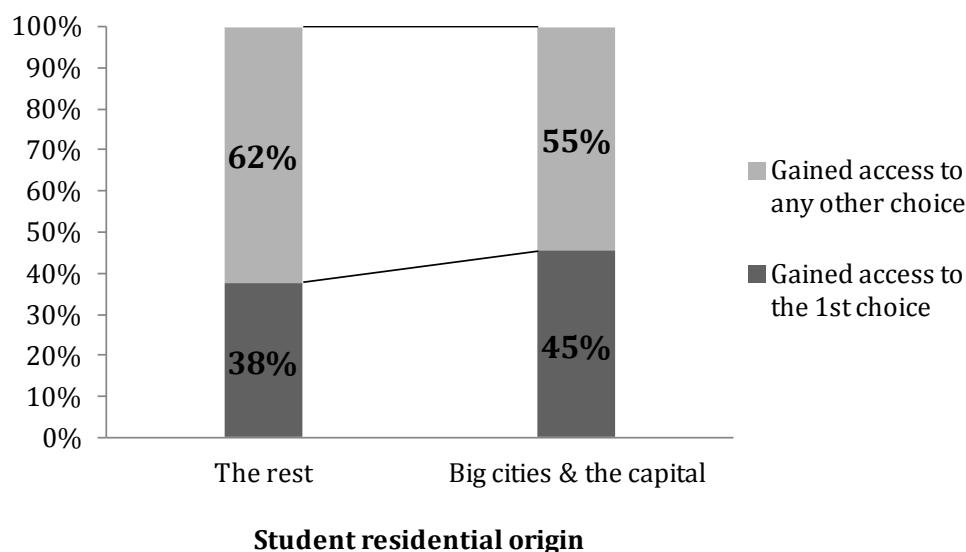


Figure 4. Cross Tabulation of Access to the first-Choice HEI and Rurality of Residential Background

Much larger differences are observed when examining cross-tabulations of applicant area of origin and prestige of destination HEIs. As seen in Figure 5, across the country, around 21% of applicants end up in the top institutions and another 20% in the lowest quality HEIs. The most prestigious HEIs⁵⁸ are the destination for 9% of rural mountainous applicants and 28% of the applicants from the capital. In contrast, Figure 5 shows that the least rigorous HEIs, i.e. those below 20th percentile, are the destinations for only 8% of applicants from Tbilisi and 39% from mountainous villages. Only one-fifth of mountainous village applicants and more than half of entire applicant pool from the capital enter an HEI which is above the 60th percentile according to the cohort academic achievement (Figure 5).

⁵⁸ Calculations conducted for the purposes of this research showed that the most prestigious HEIs were: Free University (before 2007 known as the European School of Management ESM-Tbilisi and Tbilisi Institute of Asia and Africa), Diplomatic Academy of Georgia, AIETI Medical School, Caucasus University, Georgian-American University, Ivane Javakhishvili Tbilisi State University.

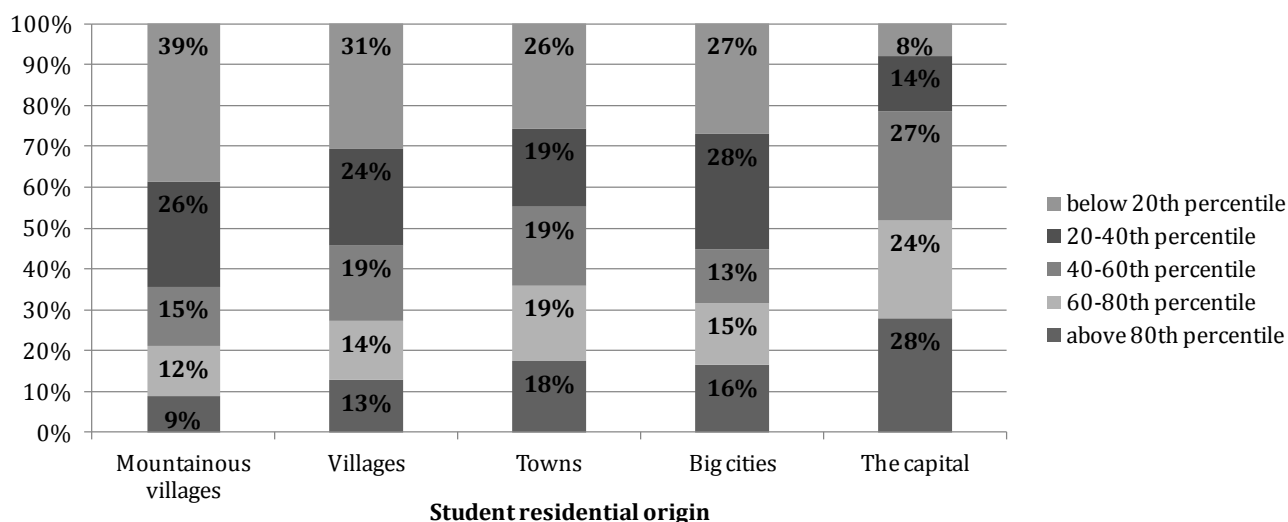


Figure 5. Destination HEI prestige categories by applicant area of origin

Multinomial logistic regression was conducted to estimate the degree to which the admission to HEIs of different prestige is predicted by applicant area of origin. Multinomial logistic regression allows predicting a categorical dependent variable with more than two levels. Backward stepwise regression is used to estimate relative contributions of different variables in explaining prestigiousness of HEI where applicants with different characteristics end up. Population groups admitted to the least prestigious (HEIs below 20th percentile), second least prestigious (20-40th percentiles), medium prestige (40-60th percentiles) and second most prestigious (60-80th percentiles) were compared to those who gained admission to the most prestigious HEIs (above 80th percentile). Multinomial logistic regression estimates the probability of membership in each category of the dependent variable. So, in our five category case, the focus is on the probability of being admitted to the least prestigious, second least prestigious, medium prestige and second most prestigious HEIs vs. gaining admission to the most prestigious ones.

Table 4 presents the odds ratios for the contrasts by HEI prestige categories. Overall, the full model fits the data well. The change in the likelihood ratio test is significant ($\chi^2=6.50, p=.000$), which indicates that our final model is significantly better than the intercept-only model. As indicated by the Nagelkerke pseudo R^2 , the association is very strong ($R^2=.727$).

Table 4. Multinomial Regression Modelling of the Destination HEI prestige

Predictors	Least prestigious (below 20 th percentile) compared to most prestigious (above 80 th percentile)		Second least prestigious (20-40 th percentile) compared to most prestigious (above 80 th percentile)		medium prestige (40-60 th percentile) compared to the most prestigious (above 80 th percentile)		second most prestigious (60-80 th percentile) compared to most prestigious (above 80 th percentile)	
	B	Exp(B)	B	Exp(B)	B	Exp(B)	B	Exp(B)
Intercept	6.61***		5.165***		4.407***		2.186***	
Public school	0.13	1.139	0.147*	1.158	0.195***	1.216	0.079	1.082
Mountainous villages	2.03***	7.647	1.140***	3.126	0.540***	1.715	0.640***	1.896
Villages	1.97***	7.18	0.986***	2.68	0.471***	1.602	0.454***	1.574
Towns	1.41***	4.104	0.556***	1.744	0.201***	1.222	0.204***	1.227
Big cities	1.36***	3.912	0.600***	1.823	0.007	1.007	0.191***	1.21
Males	0.76***	2.145	0.891***	2.437	0.975***	2.65	0.267***	1.306
Exam Year 2006	1.57***	4.794	0.935***	2.548	1.238***	3.448	1.048***	2.851
Exam Year 2007	1.01***	2.74	0.983***	2.672	-0.275***	0.76	1.426***	4.162
Exam Year 2008	0.13	1.14	0.128*	1.137	-0.412***	0.663	0.597***	1.817
Georgian speakers	-0.18	0.836	-0.238	0.788	-0.522***	0.593	-0.235*	0.791
1 st choice HEI prestige below 20 th percentile	9.40***	12043	5.85***	345	4.59***	98.3	3.66***	38.89
1 st choice HEI prestige 20-40 th percentile	6.42***	611	7.44***	1696	3.66***	38.8	3.80***	44.78
1 st choice HEI prestige 40-60 th percentile	4.14***	63	3.85***	47	5.02***	150.9	2.95***	19.06
1 st choice HEI prestige 60-80 th percentile	3.04***	21	2.94***	19	2.62***	13.7	4.08***	59.24
GAT	-0.184***	0.832	-0.13***	0.88	-0.1***	0.908	-0.07***	0.94

* p<.05, ** p<.01, *** p<.001

Interpretation note: odds of gaining admission to an HEI in the given category of prestige, as compared to the most prestigious ones, are equal if Exp(b) is 1.00, greater if it is more than 1, and less if it is less than 1. For example, applicants from mountainous villages are more likely to end up at a least prestigious HEI than a most prestigious one.

PASW statistics 18 reports both the logistic coefficient (b) and the exponentiated logistic coefficient (Exp(b)). The logistic coefficient is useful in determining the direction of the relationship. The

exponentiated coefficient indicates the expected change in the odds of gaining admission to HEI of the indicated prestige ranking vs. the most prestigious, per unit change in an explanatory variable, *ceteris paribus*.

As seen in

Table 4, there are very large differences in the odds of gaining access to the most prestigious HEIs for rural and urban applicants. Applicants from rural areas are approximately 7 times more likely to gain access to one of the least rather than the most prestigious HEI than applicants from the capital. Even applicants from towns and big cities were around 4 times more likely than Tbilisi residents to gain access to an HEI in the least prestigious rather than in the most prestigious quintile of HEIs.

Observing the

Table 4 from left to right, with the prestige of HEI groups increasing, the differences between the capital and the rest of rurality categories as well as the most prestigious and the other groups tend to decrease. Even when we compare the second most prestigious group to the most prestigious one, we see that mountainous village residents are almost twice as likely to gain admission to the second best instead of the most prestigious HEIs, in contrast to the applicants from the capital.

When controlling for an array of other factors enlisted in

Table 4, females, Georgian speakers, and private school graduates are significantly more likely to gain access to the most prestigious HEIs than males, language minorities, and public school graduates. Males are, on average, twice as likely as females to gain access to any prestige group but the best one. The differences by school ownership type and language-minority status are not as large and consistently significant as the differences by rurality or gender. I have shown elsewhere that females have higher odds

of gaining admission to HE in Georgia.⁵⁹ The evidence on male disadvantage in accessing HE and prestigious HEIs in particular is somewhat unusual for a developing country context and may give rise to future research on (a) gender differences in academic aspirations and outcomes and (b) on how female academic advantage is sustained throughout their life and whether it is reflected on their lifetime opportunities.

It is not unusual that there is a consistently significant relationship between the prestige level of applicants' first-choice HEI and the prestige level of HEI where they ended up. Applicants tend to end up at an HEI which is in the same prestige category or lower than their first-choice HEI (

Table 4). Some of the Exp(B) coefficients are wildly large. This may be due to a combination of the strong relationship between first-choice HEI and the destination HEI variables; and the fact that the first-choice HEI variable is categorical itself.⁶⁰

Applicants with higher GAT scores tend to have higher odds of gaining access to the most prestigious HEIs. It can be observed in

Table 4 that the odds decrease as we compare the least prestigious quintile to the quintiles with higher prestige. In other words, one score difference in GAT, as it would be expected, makes less of a difference when we compare more prestigious quintiles to the group of the most prestigious HEIs.

By design, the entirely automated HE admissions process in Georgia consists of the following three main procedural components: test scores obtained in HE entrance examinations, choices of HEIs/programmes of study applicants make before sitting examinations, and the number of available places at

⁵⁹ Maia Chankseliani, "Rural Disadvantage in Georgian Higher Education Admissions: A Mixed-methods Study," *Comparative Education Review* (2013), <http://www.jstor.org/stable/10.1086/670739>.

⁶⁰ J Starkweather and R Herrington, "Logistic Regression," *University of North Texas Computing and Information Technology Center*, 2010, http://www.unt.edu/rss/class/Jon/SPSS_SC/Module9/M9_LogReg/SPSS_M9_LogReg.htm.

HEIs/programmes of study available for upcoming academic year.⁶¹ In the multinomial logistic regression model predicting the destination HEI prestige (

Table 4), I control for differences by exam year, partially account for applicant choices of HEIs (first-choice HEI) and variation in their test-scores (GAT). Therefore, it can be suggested that differences by demographic variables as well as rurality may be reflecting the uncontrolled variation in the compulsory test scores and/or full array of HEI choices.

Policy implications of empirical findings

It has been revealed that HE applicants who have not graduated from a secondary school in the capital tend to consistently name the least and the second least prestigious HEIs as their first choice most frequently. Multinomial logistic regression analysis of HE applicant first-choice HEIs, their general aptitude and residential origin showed that of two applicants with the same measured general aptitude, an applicant from a mountainous village is approximately 12 times more likely to apply to a least rather than a most prestigious HEI than an applicant from the capital.

Qualitative evidence and existing international scholarship were analysed to explicate some aspects of the complex process of HE choice-making. Applicants and their families seem to be considering a number of factors like HEI location (distance to home, cost of living, attractiveness), cost of studies, prestige, and availability of the desired programme when applying to tertiary education and selecting HEIs.

Large differences were observed in applicant chances to enter prestigious HEIs by their residential origin. When controlling for prestige of first-choice HEIs, applicant measured aptitude and an array of other variables, those from rural locations tend to have significantly lower odds of gaining admission to more prestigious HEIs. Keeping in mind the limits of the multinomial logistic modelling exercise, applicants from mountainous villages are almost 8 times more likely to gain access to a least rather than the most prestigious HEI than applicants from the capital. Applicants from villages are about 7 times more likely to end up at a least prestigious rather than one of the most prestigious HEIs, compared to applicants from Tbilisi.

⁶¹ Chankseliani, "Rural Disadvantage in Georgian Higher Education Admissions: A Mixed-methods Study."

These findings are generally consistent with international scholarship on underrepresentation of rural residents at selective HEIs and the role of HEI location in the process of making HEI choices.⁶² Literature shows that rural applicants often cannot afford studying far from their homes and, therefore, distance to HEI become a crucial factor for them.⁶³ Interviews conducted for the purposes of this study show that family decision to apply to an HEI that is based in Tbilisi is related with the opportunities of financing maintenance costs that student will incur when living away from home. Thus, in the reality of having access to no funding for maintenance, rural applicants who are more likely to be poor than their urban counterparts, confront serious financial barriers when making HEI choices. As I have indicated elsewhere, the HEI choice-making in Georgia cannot be considered to be equitable when selection of HEIs is determined primarily by financial considerations, instead of applicant interests and academic abilities.

The main implication of the findings, therefore, is that student financial support policies need to be amended in a way that applicants are encouraged to make choices of HEIs based on their genuine aspirations and not the factors of affordability. International research has consistently demonstrated that financial support policies influence HE aspirations.⁶⁴

⁶² OECD, "Tertiary-type B Education (ISCED 5B)," *Glossary of Statistical Terms* (Organisation for Economic Co-operation and Development, 2003); Yang, "Access to Higher Education for Rural-poor Students in China." A Griffith and D Rothstein, "Can't Get There from Here: The Decision to Apply to a Selective College," *Economics of Education Review* 28, no. 5 (2009): 620–628, doi:10.1016/j.econedurev.2009.01.004.

⁶³ OECD and World Bank, *Tertiary Education in Chile*.

⁶⁴ J Bound and S Turner, "Cohort Crowding: How Resources Affect Collegiate Attainment," *Journal of Public Economics* 91, no. 5–6 (2007): 877–899; S Dynarski and J Scott-Clayton, "The Cost of Complexity in Federal Student Aid: Lessons from Optimal Tax Theory and Behavioral Economics," *National Tax Journal* 59, no. 2 (2006): 319–356; T Kane, *A Quasi-experimental Estimate of the Impact of Financial Aid on College-going*, NBER Working Paper No. 9703, 2003, <http://www.nber.org/papers/w9703>; T Konecny and P Mateju, *Student Financing, Opportunity Growth, and Equity in Access to Higher Education*, 2009, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1447330; Mullen, *Barriers to Widening Access to Higher Education*; E St. John et al., *Expanding College Access: The Impact of State Finance Strategies*, Research report (Lumina Foundation for Education, 2004), <http://eric.ed.gov/PDFS/ED484236.pdf>; Sutton Trust, *Knowing Where to Study? Fees, Bursaries and Fair Access* (The Sutton Trust, 2008), <http://www.suttontrust.com/research/knowing-where-to-study/>; H Vossensteyn, "Challenges in Student Financing: State Financial Support to Students – a Worldwide Perspective," *Higher Education in Europe* 34, no. 2 (2009): 171, doi:10.1080/03797720902867294..

There is a large body of literature on student financing policies in different countries. The literature differentiates between two major instruments: grants and loans. In another piece of writing,⁶⁵ I conduct a comparative analysis of the two instruments and maintain that grants may be more appropriate for the Georgian context.

Although it has been argued that loans are efficient mechanism to finance current costs of HE, literature shows that student loans have some serious limitations. First, they are not helpful in situations when there is a shortage of public resources for HE. In the short run, loans do not provide a solution to the problem of scarcity of public resources to finance HE. For example, let's ignore the potential default rates, unemployment of student loan recipients and costs of collecting repayments. Even when all of these circumstances are favorable, if we take a four-year degree programme with twenty-year pay-back period, the government will not be able to recover even half of the initial amount of the student loans until 14 years from the start of the scheme.⁶⁶In the long run, the loan scheme may increase the available resources for education only in case loan repayments are channeled into the education sector budget and not treated as general revenue. In the latter case, loan scheme will only negatively affect the private rate of return to HE.⁶⁷ Second, debt aversion may be a serious issue for families/students who come view debt as socially unacceptable.⁶⁸

As I have discussed in another paper,⁶⁹ the current needs-blind system of HE financing shall be redesigned in a way that it subsidises students who would not otherwise afford HE and at the same time provides incentives to the brightest. I argue that if there is financial support is available for rural

⁶⁵ Maia Chankseliani, "The Financial Burden of Attending University in Georgia: Implications for Rural Students," *Prospects* (2013), doi:10.1007/s11125-013-9274-x.

⁶⁶ Christopher Colclough, "Who Should Learn to Pay? An Assessment of Neo-liberal Approaches to Education Policy," in *States or Markets? Neo-Liberalism and the Development Policy Debate*, ed. Christopher Colclough and J Manor, IDS Development Studies Series (Oxford: Clarendon Press, 1991), 197–213.

⁶⁷ Ibid.

⁶⁸ C Callender and J Jackson, "Does the Fear of Debt Deter Students from Higher Education?," *Journal of Social Policy* 34, no. 04 (2005): 509–540, doi:10.1017/S004727940500913X; A Forseth and A Furlong, *Socioeconomic Disadvantage and Access to Higher Education* (Joseph Rowntree Foundation, 2000), <http://www.jrf.org.uk/publications/socioeconomic-disadvantage-and-access-higher-education>; Mullen, *Barriers to Widening Access to Higher Education*; Sutton Trust, *Knowing Where to Study? Fees, Bursaries and Fair Access*; C Warhurst et al., *Higher and Further Education Students' Income, Expenditure and Debt in Scotland 2007-08*, Research Publications (Scottish Government Social Research, 2009), <http://www.scotland.gov.uk/Publications/2009/06/24115743/0>.

⁶⁹ Chankseliani, "The Financial Burden of Attending University in Georgia: Implications for Rural Students."

applicants who gain admission to academically rigorous HEIs,⁷⁰ higher proportion of rural school graduates will name prestigious HEIs as their priority choice. Since all prestigious HEIs are located in the capital, the influence of the availability of financial support cannot be crucial.

The existing financing system is entirely merit-based, considering only the scores applicants obtain at the UNEs. There is a financing scheme for socially vulnerable students and only 2% of all admitted students receive tuition support through this scheme. Moreover, there is absolutely no public funding for maintenance costs.

I suggest that government needs to rely on grants as the major instrument of student financing in Georgia. The target group for such grants should be those who reside in low aspiration areas. Grant financing for maintenance and tuition may be decisive for shaping their aspirations.

Identification of student need and resources required for such grants are the two challenges that are associated with the introduction of needs-based grants for HE financing in Georgian settings. I discuss good practice examples of family need identification in Israel, Mozambique, Uganda, and Armenia in another article⁷¹ and argue that additional resources for needs-based grants as well as rural student maintenance support needs to come from progressive tax structure, as it is the only sustainable source of education financing.⁷²

Another important factor that may affect HEI decision-making is the timing of choice-making as well as public funding allocation decisions. As explained in the introduction, applicants make choices of HEIs at different times during the HE application process in different countries. For example, in China, choices are made after taking entrance examinations and learning about correct answers to examination tasks in each test. In the Georgian context, it may be more appropriate to allow for this type of self-assessment of test performance before making HEI choices.

Besides, it is advisable that financial support is guaranteed to specific categories of applicants at the time when they make HEI decisions. I argue that when public grant allocation decisions are made after

⁷⁰ Rural applicants are those who graduate from a secondary school in a rural area – village or a high mountainous village. By rigorous, I mean the HEIs above 60th percentile on the prestige ranking.

⁷¹ Chankseliani, “The Financial Burden of Attending University in Georgia: Implications for Rural Students.”

⁷² Christopher Colclough, “Education, Health, and the Market: An Introduction,” in *Marketizing Education and Health in Developing Countries: Miracle or Mirage?*, ed. Christopher Colclough (Oxford: Clarendon Press, 1997), 25.

applicants choose HEIs and sit exams, HEI decision-making may be distorted. Experimental evidence from China indicates that a sufficient amount of early commitment for financial aid (ECFA) allows poor rural students to make less distorted choices of universities.⁷³ Existing policies in Georgia, when applicants learn about tuition grant allocation after being admitted to HE, maybe resulting in assisting those who are already committed to pursuing academic HE rather than affecting the choices of marginal applicants.⁷⁴

When new schemes of HE financing are introduced, it will be indispensable to provide full information to applicants from rural areas and underrepresented districts. Interviews with rural families stressed the scarcity of information and advice available when it comes to HE access-related decision-making. It is, therefore, suggested that NAEC, in cooperation with schools in rural locations and underrepresented districts, expands its information campaign and ensures that advice is available for everybody in the form of an annual brochure as well as through personal communication.

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⁷³ Liu et al., “Early Commitment on Financial Aid and College Decision Making of Poor Students.”

⁷⁴ Chankseliani, “The Financial Burden of Attending University in Georgia: Implications for Rural Students.”

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Appendices

Annex 1. HEI distribution in Georgia⁷⁵



⁷⁵ Own calculations based on the data from:

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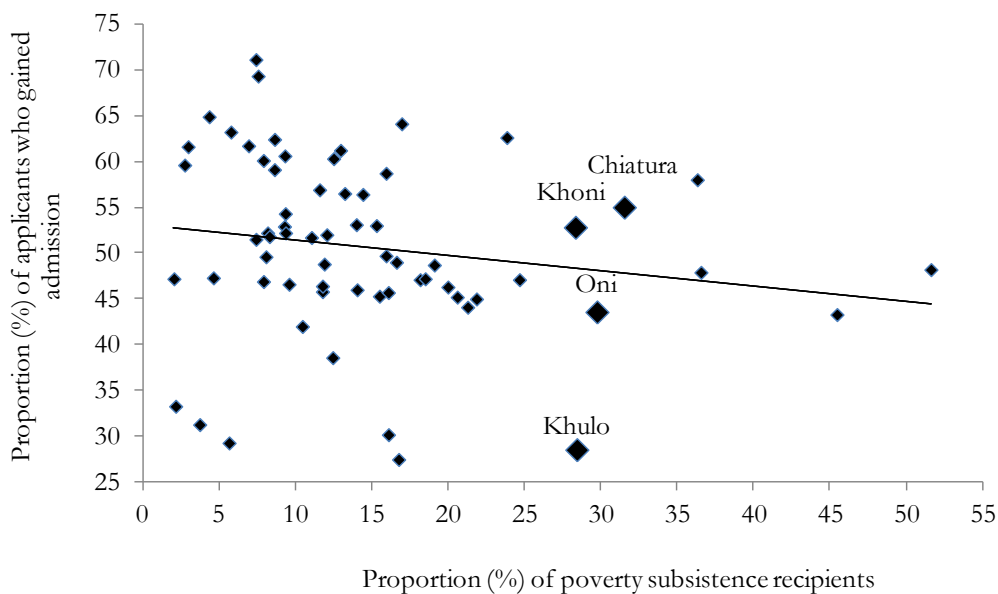
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Annex 2. Map of poverty distribution in Georgia⁷⁶



⁷⁶ Own calculations based on the data from SSA. “Subsidy Recipients’ Statistics”, 2009.
<http://www.ssa.gov.ge/index.php?id=569&lang=2>.

Annex 3. Simple regression analysis of poverty rates on admission ratios: District-level⁷⁷



⁷⁷ Own calculations based on the data from:
 GeoStat. *Statistical Yearbook of Georgia 2009*. Tbilisi, Georgia: National Statistics Office of Georgia, 2009.
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Annex 4. Categorisation of urban areas: the capital, big cities and towns⁷⁸

Name of the urban area	Population	Code
Tbilisi	1106.7	5
Kutaisi	188.6	4
Batumi	122.5	4
Rustavi	117.4	4
Zugdidi	72.3	4
Gori	50.8	4
Poti	47.5	4
Samtredia	29.6	3
Khashuri	28.3	3
Senaki	28.1	3
Zestaphoni	24.5	3
Marneuli	22	3
Telavi	20.1	3
Akhaltzikhe	19.2	3
Kobuleti	18.9	3
Ozurgeti	18.3	3
Tskaltubo	16.8	3
Kaspi	15.3	3
Gardabani	14.1	3
Tkibuli	13.8	3
Chiatura	13.8	3
Borjomi	13.6	3
sagarejo	11.5	3
Bolnisi	11.3	3
Khoni	11	3

⁷⁸GeoStat. *Statistical Yearbook of Georgia 2009*. Tbilisi, Georgia: National Statistics Office of Georgia, 2009. www.geostat.ge.

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Gurdjaani	9.5	3
Akhalkalaki	9.4	3
Tsalendjikha	9.3	3
Kvareli	8.6	3
Akhmeta	8.4	3
Mtskheta	7.8	3
Kareli	7.6	3
Lagodekhi	7.5	3
Lanchkhuti	7.5	3
Dedoplis Tskaro	7.3	3
Dusheti	7.1	3
Sachkhere	6.9	3
Abasha	6.3	3
Terdjola	6.1	3
Ninotsminda	6.1	3
Tsnori	6.1	3
Khobi	5.8	3
Martvili	5.6	3
Vale	5	3
Bagdati	4.8	3
Djvari	4.8	3
Vani	4.6	3
Tetri Tskaro	3.8	3
Dmanisi	3.6	3
Oni	3	3
Ambrolauri	2.4	3
Signagi	2.3	3
Tsalka	2	3
Tsageri	1.8	3
