Income transfer program for people with disabilities over 16 years old in Brazil

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Abstract
Background: The Continuous Cash Benefit Program, known by BPC, is a public policy for assistance that guarantees a monthly income of a minimum wage to the elderly over 65 years old and people with disabilities in a state of poverty. The objective of this study was to analyze the socio-demographic profile of BPC applicants of people with disabilities, their concessions, and rejections, in the category over 16 years old and to identify the prevalence of the main International Classification of Diseases (ICD-10) among the BPC concessions, and the main determinants of the concession.

Methods: Exploratory, cross-sectional and retrospective study, with applicants for BPC - People with Disabilities - 16 years or older as of the target audience. The Expert Medical Assessment forms provided by the National Social Security Institute of Brazil from May 2015 to October 2017 were analyzed.

Results: The rejections exceeded the concessions, and the incomplete elementary education, mental and behavioral disorders prevailed as the predominant ICD-10 among the 1134 applications analyzed. The main cause of rejection corresponded to the non-fulfillment of the disability criteria for access to the BPC. Concession rates were lower for women, and moderate, severe and complete degrees led to higher concession rates.

Conclusion: Although there are social assistance laws for people with disabilities and low income, this population is still in a state of vulnerability.

Background
Brazil is one of the pioneers of underdeveloped and developing countries in the implementation of public policies for the transfer of monetary resources to the low-income population with the objective of reducing poverty and inequities¹. The milestone in social protection for people who are in vulnerability was established by the Federal Constitution (FC) of 1988, guaranteeing that “all are equal before the law, without distinction of any nature [...]”², establishing a system of social security from the constitution of the social security, health, and social assistance³.

One of the assistance public policies created was the Continuous Cash Benefit Program (BPC), which includes social protection for the elderly over 65 and people with physical, mental, intellectual or
sensory disabilities, who did not contribute to Social Security, without favorable conditions to carry out activities to provide for their own support and their family and having a gross monthly family income per capita below $1/4 of a minimum wage\textsuperscript{4,5}. The minimum wage in Brazil is R$ 1,031.00 monthly, that is, US$ 253.32 monthly. Therefore, to receive the BPC, it is necessary to have a per capita monthly income of up to US$ 63.34. When compared to other types of assistance programs such as\textit{ Bolsa Família}, this benefit is considered to be one of the most expensive, but it reaches a lesser popular mass\textsuperscript{6}.

After applying to the BPC, the applicant must present a document proving the income and in the case of people with disabilities, they have to undergo a Medical and Social Assessment to prove whether their condition is favorable to receive the benefit\textsuperscript{7}. This assessment is based on two classifications approved by the World Health Organization (WHO): the International Statistical Classification of Diseases and Related Health Problems (ICD-10) which assesses diseases, disorders or injuries with the patient's condition\textsuperscript{8}; and the International Classification of Functionality, Disability and Health (ICF), which assesses the social aspects of the disability and relates the functionality of the disability to the impact of the social and physical environment\textsuperscript{7}.

The Expert Medical and Social Assessment - People with Disabilities has two categories: the Expert Medical and Social Assessment - Children and Adolescents and the Expert Medical and Social Assessment - 16 years old or older. Both address environmental factors, activities and participation, and body functions, in which their answers are marked by qualifiers representing: no change (0), mild change (1), moderate change (2), serious change (3), and complete change (4). After the evaluation carried out by the expert doctor and social worker and based on the sum of the qualifiers, the granting or not of the benefit is determined. When the benefit is granted, a reassessment is carried out every two years to prove or not the persistence of the disability as incapacitating for work\textsuperscript{5}.

The inclusion of the biopsychosocial model in the evaluation by the Decree 6.214/2007 decreased the percentage of benefits rejected between 2006 and 2008, from 69% to 64%, respectively. However, it does not show an improvement in the social protection of this population, as their right is denied to a
wide range of the population seeking benefit\textsuperscript{9}. One of the main reasons for rejections is the lack of knowledge about disability as incapacitating for their autonomy and the gross monthly family income per capita above $\frac{1}{4}$ of a minimum wage\textsuperscript{3}. The high rate of rejections and the lack of a criterion for granting the benefits end up becoming a challenge for Brazilian justice\textsuperscript{5}, by the recurrence of this alternative as a way of receiving the BPC. There is also no research that indicates the profile of BPC requirements for people with disabilities since the studies focus on the concessions or on the prevalence of the deficiencies pointed out in both cases (concessions and rejections) as in a study by Ivo and Silva\textsuperscript{9} addressing the excluded from the benefit. Therefore, the objective of this research was to analyze the socio-demographic profile of people with disabilities who applied to BPC, its concessions and rejections in the category over 16 years old and to identify the prevalence of the main International Classification of Diseases (ICD-10) among BPC concessions, and the main determinants of the concession.

Methods
This study is an exploratory, transversal and retrospective study. The study population had 1134 applicants for the Continuous Cash Benefit Program (BPC) - People with Disabilities – 16 years old or older. Data were collected between May 2015 and October 2017 from the National Institute of Social Security of an agency in the northwest of the state of Paraná, Brazil for the period from May 2015 to October 2017.

The Expert Medical Assessment form has 83 items (variables coded as I47 to I129), divided into 19 possible classes of dysfunctions: Mental Functions, Sensory Vision Functions, Sensory Hearing Functions, Additional Sensory Functions and Pain, Voice and Speech Functions, Cardiovascular System Functions, Hematological System Functions, Immune System Functions, Respiratory System Functions, Digestive System Functions, Metabolic and Endocrine System Functions, Genitourinary and Reproductive Functions, Neuromusculoskeletal and Movement-related Functions, Skin and related structures, Learning and Application of Knowledge, General Tasks and Demands, Communication, Mobility, and Personal Care. Each item assessing body functions is measured on a scale ranging from 0 (zero) to 4 (four), where: 0 = no change (0 to 4%), 1- mild change (5 to 24%), 2 - moderate change
(25 to 49%), 3 - severe change (50 to 95%) and 4 - complete change (96 to 100%). In addition to the items used in the body assessment, age, gender, education, concessions, rejections and the reason for the rejection were also observed.

The variable “age group” was classified considering that the Child and Adolescent Statute\(^{10}\) considers the end of adolescence at 18 years old and the Elderly Statute\(^{11}\) considers 60 years or more as the beginning of elderly life so that adults are those who are 19 to 59 years old.

Given a large number of items in the study to assess body function, homogeneous groups of disorder classes were established. The homogeneous groups were determined from a Cluster Analysis (CA), using the Complete Linkage method and Euclidean distance. For the construction of the typology of disorder classes, the matrix of scores obtained for 17 disorder classes was used as input: skin, additional and pain, metabolism and endocrine, hematological, hearing, genitourinary and reproduction, respiratory, immunological, learning and application of the knowledge, general demands, mental, communication, speech, digestive, mobility, personal care, neurological, muscle and movement. Based on the homogeneous groups of established disorder classes, the profile of the applicants and the pattern of benefit concessions were characterized. The Wilcoxon-Mann-Whitney test was applied to assess the difference in scores between groups. We consider a 95% confidence level (\(\alpha = 0.05\)). The data were analyzed using the Statistical Analysis Software (SAS) ®, version 9.4.

The Ethics Committee (Unicesumar) approved this study according to opinion number 1,918,380.

Results

**Socio-demographic data**

There was 1134 Expert Medical Assessments - People with Disabilities - 16 years old or older analyzed, of which 55.4% were rejected and 44.6% were granted (Table 1). Table 1 shows a comparison between the gender, age and education levels of the population studied. The application to the BPC - People with Disabilities - 16 years old or more, and females (n = 573) had a higher number than males (n = 561). However, the concession of the benefit, males (n = 289) overlap with females (n = 216). The women who applied for the benefit had 37.7% of them granted, while men had 51.5%.

The adults were the prevalent age group in the requirements (n = 837), followed by the elderly (n = 275) and adolescents (n = 22). The same order was observed in the concessions, with a predominance of adults (n = 385), followed by the elderly (n = 108) and adolescents (n = 12). Only those concessions for adolescents overcame the rejections. The prevalent level of education among the requirements was incomplete elementary school (n = 640), followed by complete elementary school (n = 241), incomplete high school (n = 88), complete high school (n = 78), incomplete higher
education (n = 5) and complete higher education (n = 4). Illiteracy has a considerable rate (n = 74).

Examining the concessions and rejections regarding the school level, most of the time the concessions were smaller than the rejections. When comparing the completion of a school level, there is an inverse relationship between school level and concession in most school grades, that is, the non-completion of a school grade granted more than those who finished. Except for some exceptions and different from the results mentioned above, applicants who had higher education, incomplete or complete, had a greater concession than rejection and the non-completion of the course did not interfere in the result of granting the benefit.

Table 1 - Distribution of applicants over 16 years old by gender, age group, year of the demand and education regarding the concessions of the benefit, from May 2015 to October 2017.
| Benefit granted | No | % | Yes |
|-----------------|----|---|-----|
| Gender          |    |    |     |
| Female          | 357| 56.76| 216 |
| Male            | 272| 43.24| 289 |
| Age group       |    |    |     |
| Adolescent (up to 18 years old) | 10 | 0.32 | 12 |
| Adult (19 to 59 years old)       | 452| 73.13| 385 |
| Elderly (60 years old or more)   | 167| 26.55| 108 |
| Education level |    |    |     |
| Illiterate      | 28 | 4.45 | 46 |
| Incomplete Elementary school | 359| 57.07| 281 |
| Complete Elementary school | 139| 22.10| 102 |
| Incomplete high school | 49 | 7.79 | 39 |
| Complete high school | 50 | 7.95 | 28 |
| Incomplete higher education | 2 | 0.32 | 3 |
| Complete higher education | 1 | 0.16 | 3 |
| Ignored         | 1  | 0.16 | 3  |

Legend: Elementary school: 6 to 14 years old; High School: 15 to 18 years old; Higher Education: above 18 years old
Source: authors

**Typology of Disorder Classes**

The dendrogram (Figure 1) identified three homogeneous groups of disorder classes. When the cut was made in the horizontal direction, the Group 1 was the group with the most homogeneity in the classes of function disorders, which are the highest index in the concessions to BPC - People with
Disabilities - 16 years old or more, followed by Group 3 and Group 2.

Table 2 shows that Group 1 as the group with the highest concession had the classes of disorders with the greatest aggravation of disability among the functions presented in the Medical Expert Assessment Questionnaire - People with Disabilities - 16 years old or older: “Learning and Application of Knowledge”; “Personal Care”; “Communication”; “Mental Functions”; “General Tasks and Demands”.

Group 3 as the second group with the largest scale of aggravation had “Cardiovascular System Functions”; “Digestive System Functions”; “Immune System Functions”; “Metabolic and Endocrine System Functions”; “Mobility”; “Skin Functions”; “Sensory Vision Functions” (Table 2).

Group 2, with a scale lower than the other two groups mentioned had “Sensory Hearing Functions”; “Sensory and Additional Functions and Pain”; “Genitourinary and Reproductive Functions”; “Hematological System Functions”; “Skin Functions and Related Structures”; “Respiratory System Functions”; “Voice and Speech Functions” (Table 2).

The other functions not mentioned in the grouping/functions relationship were “Congenital malformations, deformities, and chromosomal abnormalities”; “Neoplasms/tumors”; “Symptoms, signs and abnormal findings from clinical and laboratory exams, not elsewhere classified”; “External causes of morbidity and mortality”; “Injuries, poisoning and some other consequences of external causes”; “Sensory and additional functions and pain”, They can be indirectly related in any group (Table 2).

Table 2 – Classes of disorders grouping.
Table 3 shows the most prevalent health problems when applying for BPC - People with Disabilities - 16 years old or more. They are the “Mental and Behavioral Disorders” (n = 358), in which the “Mental Retardation” stands out (n = 85), according to the International Statistical Classification of Diseases and Related Health Problems (ICD-10). The concessions showed the same relationship with “Mental and Behavioral Disorders” (n = 185), with 60 coming from “Mental Retardation”.

Table 3 – Concession and rejection index based on the ICD - 10
From the ICD's concessions/rejections in general, the classifications with concessions in greater number than rejections were: “Mental and Behavioral Disorders”; “Neoplasms/tumors”; “Diseases of the eye and appendages”; “Endocrine, nutritional and metabolic diseases”; “Congenital malformations, deformities, and chromosomal abnormalities”; and “Diseases of the ear and mastoid process” (Table 3). The ICDs whose rejections exceeded the number of concessions were: “Circulatory system diseases”; “Nervous system diseases”; “Osteomuscular and connective tissue diseases”; “Injuries, poisoning and some other consequences of external causes”; “Some infectious and parasitic diseases”; “Digestive system diseases”; “Symptoms, signs and abnormal findings from clinical and
laboratory exams, not elsewhere classified”; “Diseases of the blood and blood-forming organs and some immune disorders”; “Skin and subcutaneous tissue diseases”; and “Factors that influence health status and contact with health services” (Table 3).

The concessions overcame the rejections in the following classifications: “Mental and Behavioral Disorders”; “Neoplasms/tumors”; “Diseases of the eye and appendages”; “Endocrine, nutritional and metabolic diseases”; “Congenital malformations, deformities, and chromosomal abnormalities”; “Diseases of the ear and mastoid process” (Table 3).

There is a confluence between the aforementioned group (Table 2) and the ICD's (Table 3) so that Group 1 matches the ICD of “Mental and behavioral disorders”, which was the most prevalent in both requirements and concessions, as stated earlier. Group 3 matches the most prevalent ICDs in the concession after the one mentioned in Group 1, which were: “Circulatory system diseases”; “Nervous system diseases”; “Osteomuscular and connective tissue diseases”; “Diseases of the eye and appendages”; “Endocrine, nutritional and metabolic diseases”; “Some infectious and parasitic diseases”. Group 2 had the following ICDs prevalence: “Respiratory system diseases”; “Genitourinary system diseases”; “Diseases of the ear and mastoid process”; “Digestive system”; “Diseases of the blood and blood-forming organs and some immune disorders”; “Skin and subcutaneous tissue diseases”.

*BPC Concession Standard by the Committed Function Class*

Analyzing all the groups for the concessions/rejections and the degree of deficiency, the “mild change” is the one with the highest index in the requirements and the one with the highest concession (Table 4). However, considering them by the total number of requests for changes in each group, the moderate, severe and complete changes granted BPC on a larger scale (Table 4).

Table 4 - Frequency distribution of benefits granted or not granted by the degree of changes in body functions for groups 1, 2 and 3.
BENEFIT GRANTED

| Changes in body functions | No       | Yes       |
|---------------------------|----------|-----------|
|                           | %        | %         |

GROUP 1

None 36.25 7.33
Mild 59.62 38.61
Moderate 3.97 33.07
Severe 0.16 20.59
Complete 0.16 0.4

Total 100 100

GROUP 2

None 75.68 38.81
Mild 22.42 45.35
Moderate 1.91 15.25
Severe 0 0.59

Total 100 100

GROUP 3

None 62.96 31.49
Mild 35.61 47.33
Moderate 1.43 20
Severe 0 1.19

Total 100 100

Source: authors

Other important changes for the concession to BPC - People with Disabilities - 16 years old or older were also those that had a moderate to a severe degree. The concessions were superior to the rejections, except in the “none” and “mild” categories (Table 4).

In Group 1, the changes in the functions of the “light” body prevailed (n = 570), so that they represented the largest portion between the granted and rejected benefits. In Group 2, “none” changes (n = 672) predominated, followed by “mild” (n = 370). In Group 3, “none” changes in body functions (n = 555) stood out, followed by “mild change” (n = 463).

In Groups 2 and 3, the concessions were greater than the rejections, except in the condition “none” changes in body functions (Table 4).

In general, without the distinction of groups, the number of rejections (n = 629) of the BPC requirements - People with Disabilities is higher than the concessions (n = 505) (Table 4).

Reasons for the Rejections
As reported that the rejection rates are higher than the concessions, most of the reasons for the rejections are related to non-compliance with the disability criteria for the access to the BPC (92.21%), and successively, there was the non-incapacity for life and work (4.45%), not reported (1.11%), non-attendance for an expert medical examination (0.79%), administrative withdrawal (0.79%) and per capita family income equal or greater than ¼ of the minimum wage (0.64%) (Figure 2).

Discussion

The prevalence of females in the application process to BPC - People with Disabilities – 16 years old or older, maybe due to the greater number of women in the location where the research was carried out. The municipality had 142,334 women over 16 years old in 2018 against 119,383 men in the same age group\textsuperscript{12}, noting that this result was obtained through voter registration and that not all people with disabilities are registered. Also, there were 100 women with some type of disability, and there are 76.7 men with the same condition\textsuperscript{13}. However, despite these figures, the concessions for males were higher than for females in relative and absolute terms, questioning whether the degree of dependence, in relation to the everyday activities, men is greater than women. Although the profile of the applicants to the BPC was not mentioned, Duarte and collaborators\textsuperscript{26} also observed a higher proportion of concessions for males of about 1.5 times greater than females. As for the age group, the prevalence of both requirements and concessions was of adults as expected due to the target population of this study. However, the fact that the benefit grant to adolescents overcame the rejections is coupled with the fact that up to the age group 15–19 years old, the concessions overcame the rejections, contrary to what occurs at higher age intervals\textsuperscript{26}. The presence of 29 elderly people over 65 years old among the beneficiaries draws our attention. These individuals could be inserted in the BPC - Elderly, according to Law 8.742/1993\textsuperscript{14}. This fact may have occurred due to the delay in transferring the BPC - People with Disabilities to the BPC - Elderly or lack of knowledge of them and/or order recipients.

The prevalence of incomplete elementary education among people with disabilities who applied for BPC - People with Disabilities, as well as illiterates, is associated with the idea that the education of people with disabilities is directly linked to their financial condition and, consequently, to vulnerability in obtaining a disease that causes a disability. This vulnerability is linked to the lack of information on
disease prevention as well as the acquisition of healthy habits, factors that could reduce the occurrence of communicable and non-communicable diseases\textsuperscript{15,16}. In the case of people who require the BPC, the financial condition becomes irrefutable. The Federal Constitution of 1988 that governs social protection also dictates the right to education in a regular education network for people with disabilities\textsuperscript{2}. However, this population studies in educational institutions of a philanthropic and assistance nature, having no educational methodological basis due to a failure by the State to guarantee this right to them\textsuperscript{17}, even though it is constitutionally bequeathed.

In the type of disorder in the concessions, the ICDs with the highest prevalence in the concessions are the diseases considered as the main causes of morbidity in the world and in Brazil\textsuperscript{15,18}. Consequently, they are the diseases that most incapacitate human life, explaining the grouping predominantly linked to the ICD Mental and Behavioral Disorders, in which mental retardation stood out, both in requirements and in concessions. At this point, it is necessary to emphasize that the BPC can be one of the only resources for low-income people, because people with disorders in cognitive functions that can cause dysfunctions in memory, intelligence, learning; and/or in sensory functions, such as consciousness and attention disorder\textsuperscript{19}, need the attention of caregivers who abandon their jobs to dedicate to take care of them\textsuperscript{20}. On the other hand, although the role of work for social inclusion is recognized\textsuperscript{21}, and despite Ordinance 01/03, which authorizes companies in case of non-compliance with Law 8,213/91, which determines the hiring that companies with more than 100 employees hire from 2-5%, there are obstacles to the employability of people with disabilities\textsuperscript{22}.

In this same sense, the most prevalent deficiencies in the place where the research was carried out were mainly visual, physical and/or hearing impairments, and the minority were mental and/or intellectual deficiencies.\textsuperscript{12} Therefore, those similar to Groups 3 and 2 were the requests of Group 1 that presented the deficiency in the smallest spectrum. However, it was the one that obtained the highest concession to BPC. This panorama demonstrates the causal relationship between this deficiency, disability, and difficulties in social insertion, showing the obstacles that people with
intellectual disabilities. In this condition, they face difficulties in entering the labor market due to a low level of education and choose BPC to obtain income, which can exempt them from living in society, leading them to the exclusion of yet another social segment, in addition to the labor and education market.

This leads to a discussion of the BPC grant pattern by function class compromised. The fact that the volume of requirements was classified at the level of “mild change” apparently influenced the share of concessions at this level as well, in terms of absolute numbers. However, when there was a manifestation of a “moderate”, “severe” or “complete” change, there was a greater scale of concessions than rejections, regardless of the volume of requests. Once impairment was classified at these levels, especially “severe”, the concession was granted, a fact previously found that those most likely to receive BPC - People with Disabilities are those who have moderate bodily changes, limitations and long-term restrictions or severe, with the medical expert evaluation having a greater weight than the social evaluation.

Once we found that rejections were higher than concessions, a fact also verified by Duarte et al., the non-fulfillment of the disability criteria for access to BPC, pointed out as the main cause of rejection, contradicts studies carried out in which the biggest problem for rejection to requests the per capita monthly income with above ¼ of a minimum wage. However, after the implementation of the social assessment, the main reasons for rejections were disability considered temporary and absence of incapacity for independent life and work (64.09%)15, which may indicate the lack of knowledge in considering the impairment as a disability for the reason of the rejections. Ignorance can also be considered in another context of the information about the BPC and how to proceed with its application, the main reason for the decline in requests to the BPC.

By not having a standard criterion for the concessions, the high rate of rejections and the respective reasons are a challenge for the justice of Brazil, (COSTA et al., 2016). Thus, the Judiciary becomes present in the concessions mainly in cases in which the rejection is the income, no matter how much
the applicants are in a condition of poverty (IVO; SILVA, 2012).

Conclusion

There are lower BPC concession rates for people with disabilities for women than for men, a fact that is exacerbated when considering the higher proportion of females with some disability, remaining an issue to be further investigated.

Although, in terms of absolute quantity, the changes of mild degree have contemplated the largest number of concessions, considering that it was also the category that presented the greatest number of requests, certainly, the moderate, severe and complete degrees in the changes of functions of the body led to concessions in greater proportion due to the commitment to life in society equally for people with disabilities. At the same time, the fact that the largest number of requests to the BPC whose classification of the degree of change was classified as none or mild, leads to a possible cause of the volume of rejections, without discussing the causal link that goes beyond the objectives of this research. The rejections overcame the concessions, and the main reason was that the disability did not meet the criterion to be entitled to assistance, which, in turn, shows the importance of the population's knowledge to what extent the impairment is considered a disability.

The evaluation forms carried out by the expert doctor follow the rationality of the disease and the social assessment considers the difficulties by this population in their daily lives. The result of the concession to the BPC is carried out by adding the quantifiers of the two assessments, medical expert and social, from an operating system, without any dialogue between professionals about the applicant's difficulties and conditions. The way in which the evaluation is carried out, the expert doctor has a greater weight, realizing that the deficiency is still very much linked to the biomedical model and not to the biopsychosocial one, no matter how much the ICD has been implemented in the evaluation. Thus, it is possible to affirm that the Medical Expert and Social Assessment still prioritizes the view of medical expertise without observing the social view, persisting the high rate of rejections to a vulnerable population. This reality confronts the Statute of the People with Disabilities, which establishes that the public power must “adopt measures for their protection and safety”29, which is not consistent with the results found in this study.
The scarcity of data on this population, the relationship between the reasons for rejections of the BPC - People with Disabilities in this study and related research demonstrates heterogeneity, showing difficulties in the evaluation process. The problem of standardization of an assessment instrument such as those used for granting or rejecting the benefit is intertwined with the complexity of people's deficiencies that is so disparate as to the social and economic conditions of the Brazilian population. The same disability is not necessarily the same for different people, under unequal conditions. However, the performance of BPC is unquestionable as an important public policy for social inclusion, essential for coping with social inequalities and poverty so present in the Brazilian reality.

**Abbreviations**

BPC

Continuous Cash Benefit Program

**Declarations**

Ethical approval and consent to participate by Research Ethics Committee of UniCesumar (CEP - Unicesumar) (Opinion nº 918.380) it was obtained by participants of research.

Consent for publication

Not applicable

Availability of Materials and Data

The data sets used and/or analyzed during this study are available from the corresponding author upon reasonable request.

Competing interests

The authors declare no conflicts of interests

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Authors’ contributions

GLK contributed at all times in the article. MDC helped with data collection. ESS performed the statistical analysis. ELR contributed to the database access for later collection. MUY contributed to the database access and to the writing of the manuscript. EMM was a major contributor to the orientation and writing of the manuscript.

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Figures
Cluster analysis, Complete Linkage method with Euclidean distance, considering 19 classes of body function disorder for BPC demands, for people over 16 years old with disabilities, from May 2015 to October 2017. Source: authors
Figure 2

Reasons for Rejection of the BPC - People with Disabilities - 16 years old or older. Source: authors.