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## **INSURANCE COVERAGE OF FARMER POPULATION – A VERIFICATION**

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### ***Abstract***

The article presents results of studies in the area of insurance coverage of farmer population conducted in 2016 in the Szerzyny commune (Malopolska province). The data accumulated through surveys allowed for an assessment of real scope of insurance coverage concerning mandatory and voluntary agricultural insurances. Presented data cover individual kinds of insurances connected with running agricultural farms, including the division of farms according to the farmland area.

In the sphere of mandatory insurances, a fact of not fulfilling the obligation of signing insurance contracts has been noted, whereas in case of voluntary insurances, the use of insurance coverage may be stated as marginal. Generally, it may be said that the agricultural insurance market in Poland has faced serious barriers to its development. One of them is the barrier of demand, whose main factors are: the value of property necessary to cover with insurance, insurance awareness, but also a tendency to insure the property according to owner's financial abilities. The latter factor seems to be the most important.

**Keywords:** insurance coverage, farmer population, Szerzyny commune

## INTRODUCTION

The paper addresses the issues related to insurance coverage of farmer population. The problem is important due to the risk accompanying almost all human activities, particularly economic activity in agriculture (Hyski 2016). Crop failures, unfavourable atmospheric conditions, problems with sale of produced agricultural products cause that efficient and effective operation of economic subjects in agriculture sector becomes increasingly difficult. Insurance provides opportunities to safeguard agricultural activity against various kinds of risks connected with conducting this specific economic activity.

The aim of the paper is to examine the scope of insurance coverage of farming population. The analysis covers both mandatory (The Act on Compulsory Insurance 2003) and voluntary insurances. It includes also the division of farms according to their farmland area. Survey questionnaire was used in order to determine the actually realized scope of insurance coverage for farmers and their household members, the property connected with agricultural production, but also the results of this production. The survey was conducted among the farm owners in Szerzyny. The studies were carried out in August 2016.

Szerzyny commune (Tarnów county) is situated in the eastern part of the Malopolska province. The commune was chosen for the studies because of its rich agricultural tradition and lack of the state interference in the past, such as forming state collective farms, which disrupted the agrarian structure of individual holdings formed for ages.

Samples for the survey were chosen randomly. Confidence coefficient equaling 0.90 was assumed at determining the sample size and admissible estimation error 5%. On the basis of these assumptions, the sample size was determined as 270 agricultural holdings, which enabled the approximation of the set theoretical values of the studied variable over the whole community. The defined sample size also meets the requirement of determining such confidence interval, constructed on the basis of assumed confidence coefficient, that a half of its length would not exceed the *ex ante* calculated estimation error (Hoekstra *et al.* 2012; Hoekstra *et al.* 2014).

The analyzed farm population is not homogenous. Therefore, in order to map the actual population by the selected sample, prior to random sampling, the studied community was stratified (divided into fractions) (Sobczyk 2010) and the selection criterion was the farmland area. The sampling distribution in the strata was based on a proportional method (Miszczak and Walasek 2013), which relies on random sampling from individual strata, so that the number ratio of each subgroup was equal to the fractions of the respective strata expressed in relation to the number of elements of general community. Owing to the application of this method of sampling distribution, it becomes an automatically balanced sample

and the requirement, that the probability of getting into the sample should be the same for all units of general population, is fulfilled (Shahrokh Esfahani and Dougherty 2014, Lance and Hattori 2016).

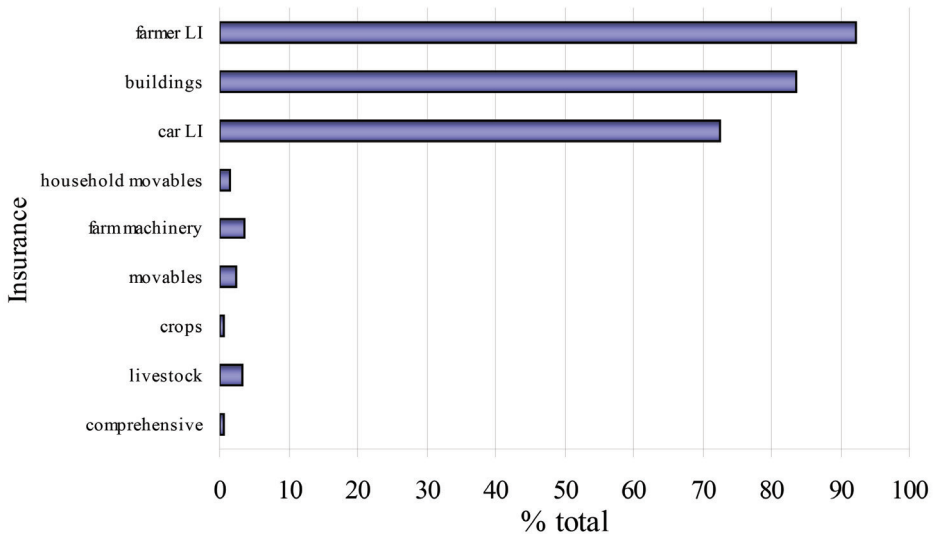
Stratified sampling was conducted on the basis of the random numbers tables (Botev and Ridder 2017) following prior appointing sequence numbers to the elements of general community. 270 farms randomly selected in this way were given a survey questionnaire to fill. The answers to the questions posed in the survey were used to conduct an analysis and generalize the conclusions drawn from it over the whole studied farm population in Szerzyny commune.

## **THE SUBJECTS INCLUDED IN THE INSURANCE COVERAGE**

On the basis of conducted studies it may be stated that farmers rarely use the insurance coverage and use its extended scope only as the result of obligatory insurances existence. However, even in this area some cases of failure to meet the obligation of signing insurance contracts were encountered, despite threatening penalties. The percentage of agricultural holdings, which signed insurance contracts in the studied commune, including the kind of insurance, was presented in Figure 1. The results of research presented in the paper do not comprise mandatory crop insurance for the farms getting the EU area payments, because the data collected by means of the survey did not evidence the farms, which would fail to meet the insurance requirement in this area.

The data compiled in Figure 1 evidences a considerable failure of farmers to meet the obligation to sign the insurance contracts. Mandatory civil liability insurance (LCI) contracts due to the ownership of an agricultural holding in the discussed commune were signed by 92.2% of farmers under obligation of having such insurance (farms with farmland area over 1 ha or special branch of agricultural production).

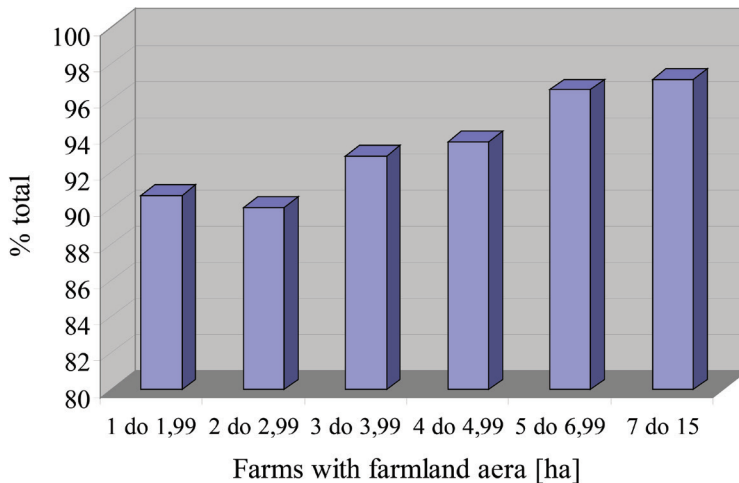
The highest percentage of farms in their total number, which took out the mandatory farmer LI was registered in the farm group with farmland area from 7 to 15 ha where their share in this group reached 97.1% (Figure 2). The same index for the farm area group from 2 to 2.99 ha was the lowest – 90.1%. The index remains on the same level for the smallest holdings, with farmland area from 1 to 1.99 ha (90.7%) and for the farms with farmland area in the range between 3 and 3.99 ha (92.9%). In the other area groups the share of farms which fulfilled the obligation to sign insurance contracts in this respect was 93.7% in the total farm number in the group with farmland area 4-4.99 ha and 96.6% in the area group with farmland area from 5 to 6.99 ha.



Explanations: \* Farms total – include only the farms which fulfilled the conditions of signing a specific insurance contract, e.g. animal insurance does not take into consideration the farms where animals were not kept.

Source: Author’s own studies

**Figure 1.** Percentage of farms in the analyzed commune included in the insurance coverage in farms total\* in 2016



Source: Author’s own studies

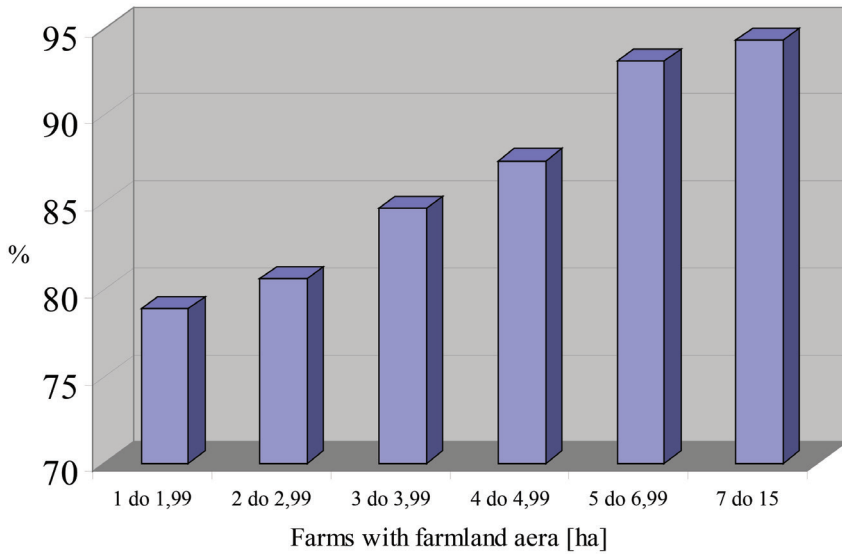
**Figure 2.** Farms in the studied commune having farmer liability insurance acc. to farmland area in 2016

Mandatory building insurance against fire and other perils in an agricultural holding was signed by 83.7% of farms in the analyzed commune (Figure 1). The farm building insurance entitles to the compensation for damage of constructions due to perils, such as: fire, hurricane, flood or flooding, torrential rain, hail, thunder strike, explosion, landslide, rockburst, avalanche or aircraft fall. Considering the farm division into the farmland area classes, a similar regularity may be seen concerning meeting the duty to sign insurance contract, as in case of farmer LI (Figure 3). The lowest percentage of farms which fulfilled the obligation to sign this contract was noted in the farmland area group from 1 to 1.99 ha – 78.9%. The same index was on a similar level 80.4% in the farm area group from 2 to 2.99 ha. In this respect, the situation was the best in the area group from 7 to 15 ha – 94.3% and for farms with area from 5 to 6.99 ha – 93.1%.

A failure to sign by a vehicle owner a contract of mandatory civil liability insurance connected with vehicle circulation permit, entails high penalties (due to police checks). Still, the share of farms which signed such contract, in total number of farms possessing vehicle permitted for circulation in the studied commune was only 72.6% (Figure 1). This unfavourable situation may be due to the fact that tractors used for field works usually do not enter hard surface roads and their owners use them only on their farms or on field and forest roads. Similarly, passenger cars, which in about 1/3 are over 10 years old, are generally used on short distances only within a village, e.g. to go to church for a Sunday mass or to a nearby shop. Therefore, the obligation to take out an insurance is often neglected.

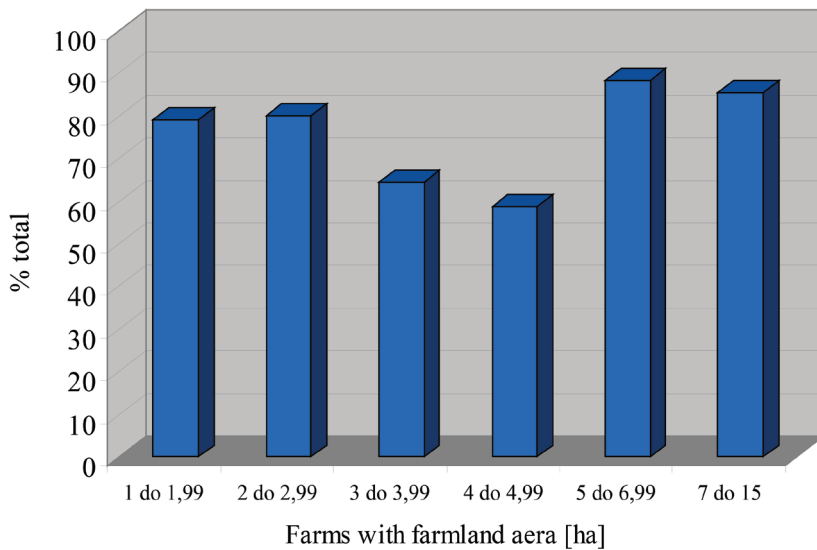
Considering farm division into farmland area classes and when the assessment criterion is the fact of possessing vehicles for which a mandatory civil liability insurance contract was signed, it may be noticed (Figure 4), that the farms which did not fulfill the insurance obligation are concentrated in the medium area groups, i.e. farmland area 4-4.99 ha (58.7% of insured vehicles) and 3-3.99 ha (64.5% of insured vehicles). These farms possess the highest number of tractors and for this reason the statistics are underestimated (the share of insured vehicles in the total number of vehicles according to the kind of vehicle will be discussed later). The highest percentage of insured vehicles was registered on farms with area of 5-6.99 ha (88.4%) and 7-15 ha (85.6%) and was slightly lower on farms with area 2-2.99 ha (80.0%) and 1-1.99 ha (79.2%).

In the group of voluntary insurances, 3.7% of the agricultural holding in the analyzed commune took out an insurance on farm machinery (Figure 1), 3.4% on animal death or necessary slaughter, 1.8% on movables, 1.6% on household movables, 0.7% signed comprehensive insurance contracts, whereas 0.6% of farms insured their crops. In view of such negligible percentage of insured farms, further analysis according to the division into farmland area classes would be unreliable. The cases of taking out a voluntary insurance on crops or livestock were most frequent for the farms running production for the market.



Source: Author's own studies

**Figure 3.** Farms in the studied commune having farm building insurance acc. to farmland area in 2016

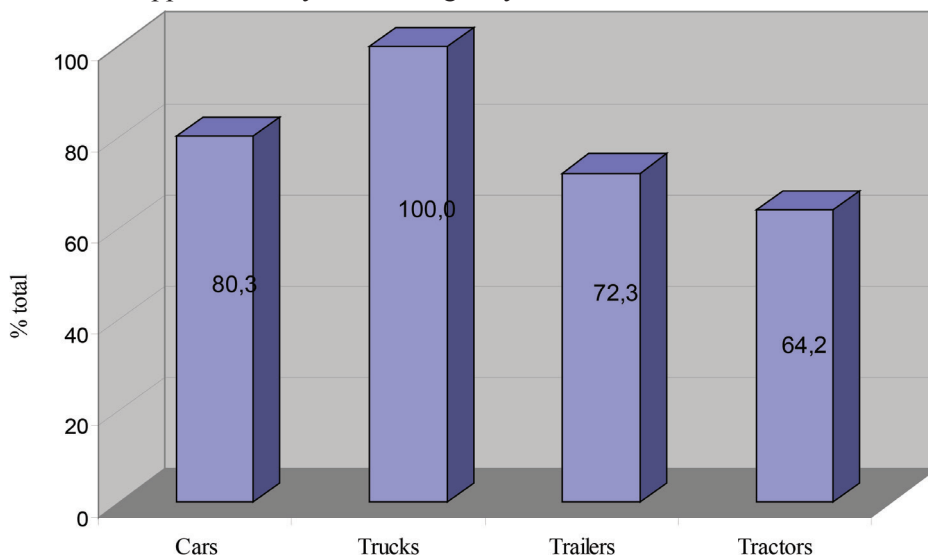


Source: Author's own studies

**Figure 4.** Farms in the studied commune possessing vehicle LI acc. to farmland area in 2016

## THE USE OF SELECTED PROPERTY INSURANCES

The presented studies covered also verification of the scope of using the insurance coverage by agricultural holdings owners concerning possessed vehicles, farm machinery, livestock and crops. Previous considerations have shown that in the studied commune the share of farms possessing vehicles and meeting the requirement to sign vehicle liability insurance (LI) contract due to these vehicles circulation, was on the level of 72.6%. Taking into consideration the kinds of vehicles subject to insurance, it may be noticed that both trucks and delivery vans were covered by insurance in 100%. Passenger cars were insured in 80.3%, trailers in 72.3%, whereas tractors only in 64.2% (Figure 5). As the main reason for not paying an insurance premium 84% of farms stated “the lack of funds”. The second most frequent answer (68%) was “no necessity for insurance” and the answer applied usually to the obligatory insurance of tractors.



Source: Author's own studies

**Figure 5.** Vehicles in the studied province with LI contracts in 2016

Farmers used a comprehensive motor insurance (AC) for passenger cars only in few cases. No need to take out this insurance was justified by the car age and its unattractiveness for a potential thief. However, inadequate funds were stated as the most common cause of a lack of insurance policy. Only 5.6% of vehicles possessed by the farmers in the studied commune were covered by a comprehensive motor insurance (AC).

Farm machinery insurance coverage applied to 0.9% of farm machines possessed by the agricultural holdings owners. Very few cases in which insurance contract was signed concerned new and generally valuable machinery.

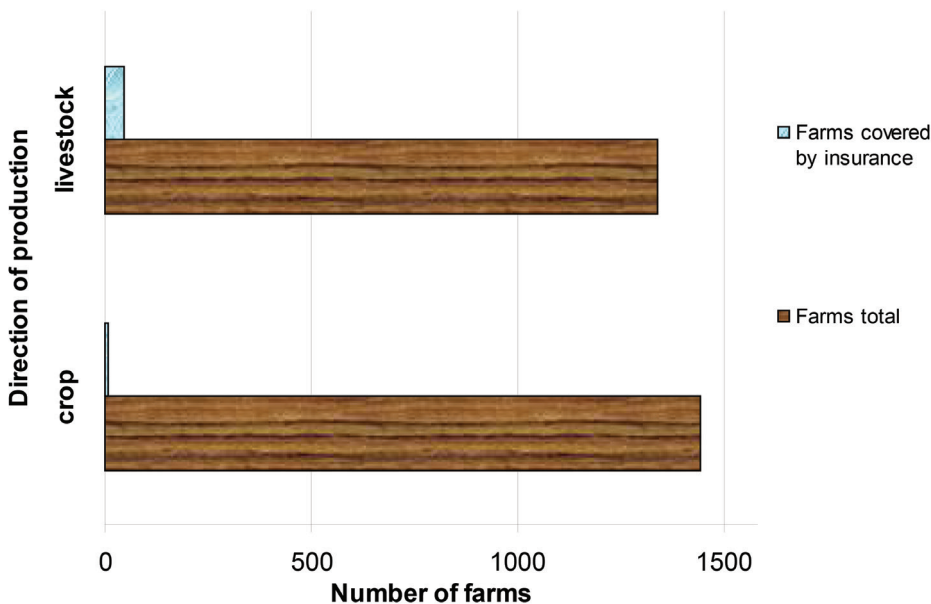
Voluntary animal insurance against death or necessary slaughter was generally taken out for main animal species, i.e. cattle, pigs or horses (usually used as traction force). Cattle was insured in 2.9%, pigs in 3.5% and horses in 2.2%.

Voluntary crop insurance – most rarely taken out in the analyzed commune – applied mainly to wheat crop on farms mainly focused on production for the market. The percentage of insured wheat crops in wheat crops total was 3.4%. No other crop insurances were identified.

### INSURED AGRICULTURAL ACTIVITIES BY TYPE

Agricultural activity may be conducted as crop or livestock production. Therefore, taking into consideration the direction of conducted agricultural activity as a criterion, one may distinguish the following types of farms:

- farms conducting crop production,
- farms focused on livestock production,
- farms with mixed crop-livestock farming.



Source: Author's own studies

**Figure 6.** Farms in the studied commune covered by insurance acc. to the direction of production in 2016



Concerning the total number of agricultural holdings in the studied commune, 15.4% of farms were conducting exclusively crop production, 8.8% of farms pursued only livestock production and 85.8% of holdings focused on mixed crop-livestock production. Therefore, the share of farms conducting livestock production (exclusively or together with crop production) was 84.6% of the farms total, whereas the percentage of farms with crop production (exclusively or together with livestock) was 91.2% of the farms total.

The share of farms covered by insurance according to the kind of production was presented in Figure 6. The percentage of farms covered by livestock insurance in the total number of agricultural holdings possessing animals in the studied commune was 3.4% (which constitutes 2.8% of the total number of farms). The share of farms using insurance coverage of crops in the total number of holdings running crop production was 0.6%.

Such low index of the share of farms covered by insurance in the total number of farms has its cause in the deficiency of financial means on farms, because the respondents stated the lack of funds which they could allocate to the purpose as the main reason why they did not take out an insurance. The situation is unfavorable, especially in view of annually repeatable floods and flooding of farms in the analyzed commune. It is caused by the pattern of the neighboring streams, which at the time of heavy rainfall change into torrents bursting banks and causing considerable loss on the nearby farms. However, despite periodically recurring damage due to the atmospheric factors, farmers rarely fulfill the need to take out insurance.

## CONCLUSION

Obtained research results allow for an empirical supporting of some general picture of agricultural insurance market functioning in Poland from its demand side. Based on the studies of the literature of the subject and analysis of the current and past socio-economic situation, one may find some reasons for the low level of insurance coverage in Polish agriculture, even in the sphere of mandatory insurances. Agricultural insurance market in Poland encountered barriers to its development. A demand barrier occurred on the side of insurance services consumers and its sources were accumulating over history. Under historical and political conditions Polish agriculture did not undergo the changes typical for market economy.

The demand side of insurance market for agriculture, in the first place represented by farmer population, is determined mainly by the following conditions:

- the value of property due for insurance coverage,
- realized need for insurance,

- willingness to take out insurance due to financial capacity and availability of competitive methods of risk management (self-insurance).

Referring to the aspects above, it cannot be said that the lack of the subject of insurance was the main cause of low level of agricultural insurance market development in Poland, although both the technological advancement level and the size of property in possession of entities engaged in agricultural activity differ from the ones in the West European countries.

At the current state of insurance market development in Poland an improvement of financial situation of people conducting agricultural activity, seems to be an agent more important for breaking the demand barrier than the factor of awareness. The efforts of only increasing the insurance awareness among population engaged in agriculture cannot bring the expected results. The precondition for the success of information and education activities in this area is an improvement of financial situation of people conducting farming activity, because without adequate means, even a fully realized need cannot be fulfilled.

Introducing mandatory insurance should theoretically improve the scope of insurance coverage, yet because of the fact that all insurances in Poland (irrespectively: mandatory or voluntary) are of a conventional nature, the problem of enforcement of insurance obligation exists. In a way it leads to a degeneration of the insurance institution because when an uninsured farmer suffers a damage, he is not entitled for any compensation. Moreover, he will be charged with a penalty fee because of the failure to fulfill the obligation of taking out mandatory insurance. In this case the insurance, instead of protecting the insured property, increases farmers' loss.

The agricultural insurance market in Poland is crucial for reducing the risk of agricultural production on all kinds of farms, but is also particularly important for dynamically developing farms and for farms in structurally weak areas. It is impossible to properly develop the process of concentration and specialization of production or increase the competitiveness of Polish agricultural holdings without developing an efficient insurance system.

## REFERENCES

Botev, Z., Ridder, A. (2017). *Variance Reduction*. Wiley StatsRef: Statistics Reference Online, 1-6, DOI: 10.1002/9781118445112.stat07975.

Hoekstra, R., Johnson, A., Kiers, H. A.L. (2012). *Confidence intervals make a difference: Effects of showing confidence intervals on inferential reasoning*. Educational and Psychological Measurement, 72: 1039–1052.

Hoekstra, R., Morey, R. D., Rouder, J.N., Wagenmakers, E.J. (2014). *Robust misinterpretation of confidence intervals*. Psychonomic Bulletin & Review, 21(5): 1157-1164, DOI: 10.3758/s13423-013-0572-3.

Hyski, M. (2016). *Ochrona ubezpieczeniowa działalności rolniczej w Polsce (część I)*. *Pragmata Tes Oikonomias*, X, 23-32, DOI: <http://dx.doi.org/10.16926/pto.2016.10.02>.

Hyski, M. (2016). *Ochrona ubezpieczeniowa działalności rolniczej w Polsce (część II)*. *Pragmata Tes Oikonomias*, X, 33-42, DOI: <http://dx.doi.org/10.16926/pto.2016.10.03>.

Lance, P., Hattori, A. (2016). *Sampling and evaluation: A guide to sampling for program impact evaluation*. Chapel Hill, North Carolina: MEASURE Evaluation, University of North Carolina.

Miszczak, A., Walasek, J. (2013). *Techniki wyboru próby badawczej*. *Obronność – Zeszyty Naukowe Wydziału Zarządzania i Dowodzenia Akademii Obrony Narodowej*, 2(6): 100-108.

Shahrokh Esfahani, M., Dougherty, E. (2014). *Effect of separate sampling on classification accuracy*. *Bioinformatics*. 30(2): 242–250, DOI: 10.1093/bioinformatics/btt662.

Sobczyk, M. (2010). *Statystyka opisowa*. Warszawa: Wydawnictwo C.H. Beck.

*Ustawa z dnia 22 maja 2003 r. o ubezpieczeniach obowiązkowych, Ubezpieczeniowym Funduszu Gwarancyjnym i Polskim Biurze Ubezpieczycieli Komunikacyjnych*. (Dz.U. 2016 poz. 2060) [*The Act of 22 May 2003 on compulsory insurance, the Insurance Guarantee Fund and the Polish Motor Insurers' Bureau*, *Journal of Laws* 2016, item 2060].

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