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# YOUNG PEOPLE AS ACCESSIBILITY OPERATORS FOR AUTONOMOUS VEHICLES: THE CONCEPT AND EVIDENCE FROM SERBIA

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**Abstract:** Accessible autonomous-vehicle services may require human support even when driving is fully automated. This paper conceptualises the autonomous-vehicle operator (AVO) as an accessibility operator who assists passengers during different stages of their journey. The study aims to outline the basic functions of this emerging role and provide an initial assessment of young people's interest in performing it. A secondary analysis was conducted using 1,337 valid responses from an online survey in Serbia. Interest was described as the proportion of respondents who agreed or strongly agreed with four statements, while willingness to apply was compared across basic respondent characteristics using Pearson's chi-square test. The results show that 38.7% wanted to learn more about the occupation, 26.3% believed they might enjoy the work, 22.4% would apply if a position became available, and 19.7% would consider becoming an AVO. Willingness to apply was higher among respondents who were not pupils or students and among those holding a driving licence, whereas no significant differences were found by sex, age or place of residence. The findings indicate limited but meaningful initial interest and highlight the need to define the AVO role more clearly in terms of tasks, competencies, training and opportunities for professional development.

**Keywords:** autonomous vehicles; accessibility operator; persons with disabilities; young people; career interest

## 1. INTRODUCTION

Limited access to transport remains a persistent barrier to employment, education, health care, and social participation for persons with disabilities. Barriers occur throughout the journey chain and include inaccessible infrastructure and vehicles, unreliable assistance, a lack of information, safety concerns, and negative interactions with service providers (Bezyak et al., 2017, 2020; Park and Chowdhury, 2022; Mijailović et al., 2024). Autonomous vehicles (AVs) can remove one major barrier: the need to drive. This could substantially increase mobility for people who do not drive and those whose medical conditions restrict travel (Harper et al., 2016; Hwang et al., 2020, 2021; Petrović et al., 2022).

Automation alone does not necessarily make a journey accessible. Boarding, securing wheelchairs, orientation, communication, responses to unexpected situations, and the connection between the vehicle and its surroundings remain important (Dicianno et al., 2021; Golbabaei et al., 2024; European Commission, 2025; Yousfi et al., 2025). Accessibility should therefore be

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viewed as a property of the entire service system, not merely as a feature of the vehicle. One possible solution is human support provided by an autonomous vehicle operator (AVO), either in the vehicle or remotely (Hwang and Kim, 2023; Petrović et al., 2026a). In this paper, AVO refers to personnel who help ensure that AV services are safe and accessible to use.

The future workforce needed to provide support in autonomous vehicles has rarely been considered. The new role may be socially valuable, but it is not yet sufficiently familiar or clearly defined for young people to recognise it as a possible career option. This short exploratory study therefore has three aims: (1) to present the concept of an autonomous vehicle accessibility operator and propose its basic functions; (2) to determine young people's level of interest in learning about the role, considering the occupation, and applying for a position; and (3) to examine whether stated willingness to apply differs by basic respondent characteristics. The paper contributes a conceptual definition of a new occupation and initial descriptive findings based on a survey of young people in Serbia. The results do not constitute a forecast of future employment; rather, they provide a basis for defining the occupation more precisely, developing pilot training programmes, and planning further research.

## 2. THE AVO CONCEPT FROM AN ACCESSIBILITY AND SAFETY PERSPECTIVE

The AVO should be understood as a complement to universal and accessible design, not as a substitute for it. Vehicle architecture, multimodal interfaces, booking channels, accessible boarding locations, and emergency systems should enable passengers to use the service as independently as possible (Dicianno et al., 2021; Golbabaei et al., 2024; European Commission, 2025; Yousfi et al., 2025). Human support becomes important when a standard interface cannot reliably meet the needs of different passengers, particularly persons with disabilities, or when an unexpected disruption requires assessment, communication, and coordination.

A hybrid service can combine basic technical adaptations to the vehicle with human support available when needed (Petrović et al., 2026a). Such a model allows passengers to complete most of the journey independently, with the operator becoming involved only when additional information, physical assistance, or a response to a technical or safety problem is required. In this way, human support does not reduce passenger independence; it provides an additional level of safety and accessibility.

Two basic forms of support are possible (Hwang and Kim, 2023; Petrović et al., 2026a):

- **An in-vehicle operator** can provide direct assistance with boarding, seating, securing mobility aids, and disembarking.
- **A remote operator** can monitor several vehicles, communicate through accessible audio and video channels, guide the vehicle to a suitable boarding location, and arrange on-site assistance when necessary.

In practice, these two forms of support need not be mutually exclusive. A remote operator may provide the primary level of support, while an in-vehicle operator or another qualified person may be engaged when direct physical assistance is required. The mode of support should depend on the passenger's needs and preferences, the type of journey, the vehicle's characteristics, and the availability of on-site services.

The AVO role combines work with technology, an understanding of disability, accessible communication, passenger protection, and coordination of the entire journey. In addition to knowing how autonomous vehicle systems operate, the operator should be trained to communicate with people who have different sensory, physical, or cognitive needs and to respond to incidents and emergencies. Particular attention should be paid to preserving passengers' dignity, privacy, and right to decide the type and extent of assistance they need.

Clear boundaries for operator responsibility are essential to the development of this role. It is necessary to define when the operator provides information, when a technical intervention may be performed, and when emergency services or on-site assistance must be engaged. Data protection rules must also be established, particularly when a remote operator uses audio and video communication or accesses information about passengers' needs and movements.

The allocation of tasks must be co-designed with persons with disabilities and tested in operational pilots. Their participation is important when defining tasks, developing training programmes, and evaluating service quality. The pilot implementation should inform the development of a standardised job description, a vocational training programme, and an appropriate certification system. This process could gradually establish the AVO concept as a recognised occupation with clear competencies, responsibilities, and opportunities for professional development.

Table 1 presents a proposed minimum set of AVO functions as an initial framework for defining the new occupation. The proposed functions do not constitute a final professional standard. Their purpose is to establish an initial distinction among the tasks and competencies that should be tested through pilot training and practical implementation under different transport conditions.

**Table 1.** Proposed minimum set of functions for an autonomous vehicle accessibility operator

| Journey stage | Operator function |
|---|---|
| Before the journey | Identifies individual accessibility needs, conditions at the pick-up location, and the preferred method of communication. |
| Boarding | Assists with boarding, securing and storing wheelchairs, fastening seat belts, seating, and activating safety and assistance systems. |
| During the journey | Communicates assertively, assists with orientation, and resolves technical or safety problems. |
| Arrival | Confirms the stopping location, assists with disembarking, and coordinates onward support when needed. |

## 3. METHOD

This paper analyses data collected as part of a broader study of young people's interest in the prospective occupation of autonomous vehicle accessibility operator. Data were collected through an anonymous online questionnaire distributed via social networks in Serbia in July and August 2025. Before beginning the survey, respondents were informed about the study's purpose and the voluntary and anonymous nature of participation. They then provided informed consent to participate and to allow their responses to be used for research purposes.

Before the main study, a pilot study with 20 participants was conducted to assess the clarity of the questions and the completion process and to estimate the time required to complete the questionnaire. Minor revisions were made to the questionnaire based on the feedback received. Participants in the pilot study were not included in the main sample.

The original questionnaire consisted of two parts. The first collected basic sociodemographic information, including sex, age, education and employment status, place of residence, driving licence possession, and whether the respondent had a person with a disability in their close social circle. The second contained a series of statements examining attitudes towards autonomous vehicles, the social value of the new occupation, and interest in the operator role. Respondents indicated their level of agreement on a five-point scale ranging from 1, "strongly disagree", to 5, "strongly agree".

Four statements that directly describe interest in the AVO occupation were used for this paper: considering the possibility of becoming an operator, wanting additional information, believing that the work might be enjoyable, and being willing to apply if a suitable position became available.

A total of 3,962 responses were collected. Data quality was checked in three steps. First, responses from participants who failed at least one of the two attention-check questions were excluded, leaving 2,811 responses. Questionnaires completed in less than five minutes were then excluded because the pilot study indicated that this was insufficient time to answer carefully. This step left 1,620 responses. Finally, because the study focused on young people, respondents older than 40 were excluded. The final sample comprised 1,337 respondents.

The analysis was limited to descriptive statistics and simple comparisons between groups. Interest was reported as the number and proportion of respondents who answered "agree" or "strongly agree". The statement that a respondent would apply if a position for an autonomous vehicle accessibility operator became available was used as the most concrete indicator of interest.

Willingness to apply was compared by sex, age group, pupil/student status, place of residence, driving licence possession, and whether the respondent had a person with a disability in their close social circle. The statistical significance of differences was tested using Pearson's $\chi^2$ test, with a significance threshold of $p < 0.05$. Cramér's V was used to assess the strength of association. Respondents with missing or unknown data were excluded only from the comparison involving that variable.

## 4. RESULTS

Women accounted for 62.4% of the final sample, and the respondents' mean age was 22.4 years (SD = 5.4). Pupils or students made up 64.5% of the sample, 46.4% lived in an urban settlement, 77.3% held a driving licence, and 18.7% reported having a person with a disability in their close social circle.

### 4.1. Level of interest in the avo occupation

The largest proportion of positive responses was recorded for the statement about wanting additional information on the new occupation. A total of 38.7% of respondents said that they wanted to learn more about the role of an autonomous vehicle accessibility operator. A further 26.3% believed that they might enjoy the work, while 22.4% stated that they would apply if a suitable position became available. In addition, 19.7% would consider becoming an operator in the future.

The results show that general curiosity about the new occupation is stronger than a concrete willingness to pursue it. Approximately two fifths of respondents wanted more information, while slightly more than one fifth expressed willingness to apply. This indicates a broader group of young people for whom information about the tasks, working conditions, required competencies, and opportunities for advancement could make the occupation more tangible.

### 4.2. Differences by basic respondent characteristics

Agreement with the statement that the respondent would apply if an AVO position became available was used as the most concrete indicator of interest. The *p*-values were obtained using Pearson's chi-square test. The comparison results are shown in Table 2.

No statistically significant difference was found by sex. Willingness to apply was reported by 24.1% of men and 21.5% of women, $\chi^2(1) = 1.21$; $p = 0.271$. The difference by place of residence was also not significant: 21.4% of respondents from urban settlements and 23.3% of those from other settlements would apply, $\chi^2(1) = 0.69$; $p = 0.405$.

The proportion of interested respondents increased gradually with age, from 20.8% in the group aged 20 or younger to 28.7% in the group aged 31 to 40. However, differences among age groups were not statistically significant, $\chi^2(3) = 4.89$; $p = 0.180$. The observed increase therefore cannot be interpreted as evidence of an association between age and willingness to apply.

A significant difference was found by education and employment status, $\chi^2(1) = 22.54$; $p < 0.001$. Among pupils and students, 18.4% would apply for the position, compared with 29.7% of the other respondents. The difference of 11.3 percentage points was the largest observed difference between the groups examined.

**Table 2.** Stated willingness to apply by respondent characteristics

| Characteristic | Group | Would apply, % | *p* |
|---|---|---|---|
| Sex | Male | 24.1 | 0.271 |
| | Female | 21.5 | |
| Age | 20 or younger | 20.8 | 0.180 |
| | 21-25 | 23.0 | |
| | 26-30 | 25.4 | |
| | 31-40 | 28.7 | |
| Education and employment status | Pupil/student | 18.4 | ***<0.001*** |
| | Other | 29.7 | |
| Place of residence | Urban | 21.4 | 0.405 |
| | Other | 23.3 | |
| Driving licence | Yes | 24.8 | ***<0.001*** |
| | No | 14.5 | |
| Person with a disability in the close social circle | Yes | 27.2 | ***0.046*** |
| | No | 21.4 | |

Willingness to apply was also higher among respondents who held a driving licence. A total of 24.8% of respondents with a licence would apply for the position, compared with 14.5% of those without a licence, $\chi^2(1) = 14.34$; $p < 0.001$. This finding may indicate that experience related to driving and traffic makes it easier to envisage a future AVO role.

Respondents who had a person with a disability in their close social circle were slightly more likely to express willingness to apply than other respondents, at 27.2% compared with 21.4%. The difference reached borderline statistical significance, $\chi^2(1) = 3.98$; $p = 0.046$, but the association was very weak and should therefore be interpreted with caution.

Overall, basic respondent characteristics only weakly differentiate young people who would apply for an AVO position. The most pronounced differences were associated with education and employment status and possession of a driving licence, but these associations were also

weak. The results therefore provide primarily an initial description of potential interest; future research should examine more complex relationships among personal attitudes, career expectations, and willingness to apply.

## 5. DISCUSSION

The results show initial interest among young people in the occupation of autonomous vehicle accessibility operator, although this interest is expressed more often as curiosity than as a clearly formed intention to seek employment. Given that the AVO is not yet a standardised or widely known occupation, the finding that approximately one fifth of respondents were potentially interested is notable. Nevertheless, stated willingness to apply cannot be interpreted directly as an actual labour supply. The difference between wanting information and being willing to apply indicates that many respondents do not yet have a sufficiently clear understanding of the occupation. Young people are probably unfamiliar with the operator's specific tasks, required qualifications, training, working conditions, responsibilities, and opportunities for advancement. The interest identified in the survey should therefore be viewed as initial openness to the idea rather than a final occupational choice.

Simple comparisons show that sex, age, and place of residence are not significantly associated with willingness to apply. The largest difference was found by education and employment status. Respondents who were not pupils or students expressed willingness to apply more often than pupils and students. One possible explanation is that respondents who have completed their education or entered the labour market consider specific employment opportunities more directly. Pupils and students may be curious about new technologies while still lacking a clear sense of their future career direction. However, because this was a simple comparison, the effect of education and employment status cannot be separated from those of age, work experience, and other related characteristics.

Willingness to apply was also higher among respondents who held a driving licence. Experience with driving and traffic may make occupations related to vehicles and mobility easier to understand. Nevertheless, the AVO role should not be presented as an extension of the driving profession. Its core functions include passenger assistance, accessible communication, technological knowledge, responses to unexpected situations, and coordination of different parts of the journey. Holding a driving licence may therefore indicate familiarity with traffic, but it need not be a prerequisite for every form of this occupation, particularly for remote operators.

Respondents who had a person with a disability in their close social circle were slightly more likely to report that they would apply for the position. Personal experience of barriers to mobility may contribute to a better understanding of the need for accessible support. However, this difference was small and at the threshold of statistical significance, so it should not be overstated. Knowledge of the needs of persons with disabilities should be developed through appropriate training and collaborative work rather than assumed solely on the basis of a candidate's personal experience.

Overall, the weak associations show that basic demographic characteristics are insufficient to explain interest. Future outreach and recruitment should therefore not be restricted to particular demographic groups. It would be more useful to give different groups of young people opportunities to learn about the operator's actual tasks through short presentations, work simulations, demonstrations of accessible communication, and pilot training. Particular attention should be paid to those who want more information but have not yet formed a clear intention to apply.

### 5.1. Practical implications

Before the occupation is introduced, its tasks and the boundaries of responsibility must be defined more precisely. The occupational description should explain the distinction between an in-vehicle operator and a remote operator, procedures for assisting with boarding and disembarking, communication during the journey, technical monitoring, and emergency response. It is also necessary to determine which activities require direct physical assistance and which can be performed remotely.

The training programme should cover basic knowledge of autonomous vehicle systems, an understanding of different forms of disability, accessible and assertive communication, passenger protection, responses to safety-critical situations, and supervised practical work. Young people should also be shown possible career development paths, including mobility service coordination, fleet monitoring, technical support, and accessibility management.

At the same time, introducing the AVO role must not shift responsibility for accessibility from vehicle designers and service providers to an individual operator. Human support should complement universal and accessible design, not compensate for systemically inaccessible vehicles, interfaces, or infrastructure. Persons with disabilities should therefore be involved in defining tasks, developing training programmes, and evaluating the quality of the future service (Dicianno et al., 2021; Golbabaei et al., 2024; European Commission, 2025; Yousfi et al., 2025).

### 5.2. Limitations and directions for future research

The results should be interpreted in light of several limitations. Data were collected online from a convenience sample in Serbia in which pupils and students were highly represented. The resulting percentages therefore do not estimate interest in the overall population of young people. In addition, respondents evaluated a hypothetical occupation that does not yet have a standardised description, so their understanding of its tasks and working conditions may have varied.

Furthermore, comparisons between groups were conducted separately and were not adjusted for possible interrelationships among age, education, employment status, and other characteristics. The identified differences should therefore be treated as initial indications for further research.

Future studies could examine in greater detail the roles of attitudes towards autonomous vehicles, the occupation's perceived social value, prosocial motivation, and future-oriented career thinking. Multivariate analyses and latent construct models could show which factors independently contribute to interest and whether simple differences between groups remain when other factors are held constant.

It would also be useful to conduct experimental studies in which respondents are presented with different occupational descriptions, specific tasks, working conditions, and training opportunities. Longitudinal studies could track whether initial curiosity changes after participants learn about the occupation. Operational pilots and co-design of the role with persons with disabilities are particularly important because only practical settings can reveal passengers' actual needs, operator competencies, and the boundaries of human support.

## 6. CONCLUSION

An autonomous vehicle accessibility operator could represent a new occupation linking automated mobility with the requirements of safe and inclusive travel. The role would be particularly important when standard interfaces and technical solutions cannot reliably meet

individual passenger needs. The AVO should be understood as a complement to universal and accessible design, not as a substitute for it.

The survey results show an initial basis among young people for developing this occupation. A total of 38.7% of respondents wanted more information about the work, while 22.4% said that they would apply if a suitable position became available. Interest is therefore present, but for many respondents it has not yet developed into a concrete career intention.

Basic respondent characteristics only weakly differentiate potentially interested candidates. Willingness to apply was higher among respondents who were not pupils or students and among those who held a driving licence, while differences by sex, age, and place of residence were not confirmed. These findings indicate that future efforts to present the occupation should target a broad range of young people and clearly explain the tasks, required competencies, training, and opportunities for professional development.

The next step is to co-design and test a credible occupation in practice, rather than merely promote the idea. This requires the development of service standards, training and certification programmes, pilot testing of in-vehicle and remote support, and the direct involvement of persons with disabilities at every stage of development. Future research should examine the personal, career-related, and technological factors associated with interest in greater detail.

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## 7. LITERATURA

Bezyak, J.L., Sabella, S.A., Gattis, R.H. (2017). Public Transportation: An Investigation of Barriers for People With Disabilities. Journal of Disability Policy Studies, 28, 52–60. https://doi.org/10.1177/1044207317702070.

Bezyak, J.L., Sabella, S., Hammel, J., McDonald, K., Jones, R.A., Barton, D. (2020). Community participation and public transportation barriers experienced by people with disabilities. Disability and Rehabilitation, 42, 3275–3283. https://doi.org/10.1080/09638288.2019.1590469.

Dicianno, B.E., Sivakanthan, S., Sundaram, S.A., et al. (2021). Systematic review: Automated vehicles and services for people with disabilities. Neuroscience Letters, 761, 136103. https://doi.org/10.1016/j.neulet.2021.136103.

European Commission, Joint Research Centre (2025). Requirements for Inclusive Automated Vehicle Services – Insights for Vehicle and Smartphone Application Design. Publications Office of the European Union. https://doi.org/10.2760/7655690.

Golbabaei, F., Dwyer, J., Gomez, R., Peterson, A., Cocks, K., Bubke, A., Paz, A. (2024). Enabling mobility and inclusion: Designing accessible autonomous vehicles for people with disabilities. Cities, 154, 105333.

Grant, A.M. (2007). Relational job design and the motivation to make a prosocial difference. Academy of Management Review, 32, 393–417. https://doi.org/10.5465/AMR.2007.24351328.

Harper, C.D., Hendrickson, C.T., Mangones, S., Samaras, C. (2016). Estimating potential increases in travel with autonomous vehicles for the non-driving, elderly and people with travel-restrictive medical conditions. Transportation Research Part C, 72, 1–9. https://doi.org/10.1016/j.trc.2016.09.003.

Hwang, J., Li, W., Stough, L., Lee, C., Turnbull, K. (2020). A focus group study on the potential of autonomous vehicles as a viable transportation option: Perspectives from people with disabilities and public transit agencies. Transportation Research Part F, 70, 260–274. https://doi.org/10.1016/j.trf.2020.03.007.

Hwang, J., Li, W., Stough, L.M., Lee, C., Turnbull, K. (2021). People with disabilities' perceptions of autonomous vehicles as a viable transportation option to improve mobility: An exploratory study using mixed methods. International Journal of Sustainable Transportation, 15, 924–942. https://doi.org/10.1080/15568318.2020.1833115.

Hwang, J., Kim, S. (2023). Autonomous vehicle transportation service for people with disabilities: Policy recommendations based on the evidence from hybrid choice model. Journal of Transport Geography, 106, 103499. https://doi.org/10.1016/j.jtrangeo.2022.103499.

Jing, P., Xu, G., Chen, Y., Shi, Y., Zhan, F. (2020). The determinants behind the acceptance of autonomous vehicles: A systematic review. Sustainability, 12, 1719. https://doi.org/10.3390/su12051719.

Kaye, S.A., Somoray, K., Rodwell, D., Lewis, I. (2021). Users' acceptance of private automated vehicles: A systematic review and meta-analysis. Journal of Safety Research, 79, 352–367. https://doi.org/10.1016/j.jsr.2021.10.002.

Mijailović, R.M., Pešić, D., Petrović, Đ. (2024). Exploring transportation equity issues for persons with disabilities: The impact of gender on mobility and accessibility indicators. Journal of Transport & Health, 36, 101801. https://doi.org/10.1016/j.jth.2024.101801.

Park, J., Chowdhury, S. (2022). Towards an enabled journey: barriers encountered by public transport riders with disabilities for the whole journey chain. Transport Reviews, 42, 181–203. https://doi.org/10.1080/01441647.2021.1955035.

Petrović, Đ., Mijailović, R., Pešić, D. (2022). Persons with physical disabilities and autonomous vehicles: The perspective of the driving status. Transportation Research Part A, 164, 98–110. https://doi.org/10.1016/j.tra.2022.08.009.

Petrović, Đ., Mijailović, R.M., Pešić, D. (2026a). Adapting Autonomous Vehicles to Persons with Physical Disabilities: Technological Adaptations or Human Support? Transportation Research Arena, Budapest, 18-21 May.

Petrović, Đ., Mijailović, R.M., Pešić, D. (2026b). Are Young People Interested in Becoming Autonomous Vehicle Operators? Implications for Accessible and Inclusive Transport. Manuscript under review.

Savickas, M.L. (2013). Career construction theory and practice. In: Career Development and Counseling: Putting Theory and Research to Work, 2nd ed., 144–180.

Wigfield, A., Eccles, J.S. (2000). Expectancy-value theory of achievement motivation. Contemporary Educational Psychology, 25, 68–81. https://doi.org/10.1006/ceps.1999.1015.

Yousfi, E., Jacquet, T., Métayer, N. (2025). Automated vehicles and people living with a disability: Opportunities, challenges, and future directions for sustainable mobility. Sustainability, 17, 5941.

Zhang, Y., Kamargianni, M. (2023). A review on the factors influencing the adoption of new mobility technologies and services: autonomous vehicle, drone, micromobility and mobility as a service. Transport Reviews, 43, 407–429. https://doi.org/10.1080/01441647.2022.2119297.