

The insider: A planners' perspective on accessibility

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9 **Geneviève Boisjoly**

10 PhD student

11 School of Urban Planning McGill University

12 Suite 400, 815 Sherbrooke St. W. Montréal, Québec, H3A 2K6

13 Tel.: 514-398-4075; Fax: 514-398-8376

14 E-mail: genevieve.boisjoly@mail.mcgill.ca

15
16 **Ahmed M. El-Geneidy**

17 Associate Professor

18 School of Urban Planning McGill University

19 Suite 400, 815 Sherbrooke St. W. Montréal, Québec, H3A 2K6

20 Tel.: 514-398-4075; Fax: 514-398-8376

21 E-mail: ahmed.elgeneidy@mcgill.ca

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24 Word Count: 5033+ 10 figures (2500) = 7533 words

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39 Paper accepted for presentation at the Transportation Research Board Annual Meeting

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42 For citation please use: Boisjoly, G., & El-Geneidy A. (2017). *The insider: A planners' perspective on*
43 *accessibility*. Paper to be presented at the 96th Transportation Research Board Annual Meeting,
44 Washington D.C., USA.
45

1 **ABSTRACT**

2 Accessibility, the ease of reaching destinations, is a key land use and transportation performance
3 measure that has been studied for decades by researchers. Nevertheless, its implementation in
4 policy and practice is generally limited. The goal of this study is to identify the factors that foster
5 and prevent the use of accessibility metrics by practitioners. In order to achieve this objective, a
6 survey on the use of accessibility metrics was conducted among 343 practitioners around the
7 world. Findings from the survey show a gap between knowledge of the concept of accessibility
8 and its implementation in policy and practice. While 90% of the respondents are familiar with the
9 concept, only 55% stated that they use accessibility metrics in their work. Whereas lack of support
10 and interest does not appear to be a major obstacle to implementing accessibility metrics, lack of
11 knowledge and data are highlighted as the main barriers to implementation in practice. These
12 results suggest that further training is required to support the use of metrics by planners and policy-
13 makers. Furthermore, including clear accessibility indicators in planning documents is key to
14 promoting the use of metrics in policy and practice, as it was stated as a main reason motivating
15 the generation of accessibility metrics. This research highlights potential avenues to support the
16 integration of accessibility metrics in policy and practice and is of relevance to researchers,
17 planners and policy-makers wishing to foster accessibility-based planning approaches.

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19 Key words: Accessibility metrics, Accessibility planning, Sustainable mobility, Access to
20 destinations, Land use and transportation planning

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1 INTRODUCTION

2 Accessibility, the ease of reaching destinations, is a key land use and transportation performance
3 measure (1). It has been extensively researched with the ultimate purpose of informing decision-
4 making and influencing land use and transportation planning. Yet, little is known on the
5 implementation of accessibility metrics in transportation practice. In fact, although transportation
6 issues are increasingly framed in terms of access to opportunities (2-6), accessibility is still largely
7 marginalized in practice (7-9).

8 The aim of this study is to understand the factors that foster and prevent the use of
9 accessibility metrics by land use and transportation practitioners. In order to achieve this objective,
10 a survey on the use of accessibility metrics was conducted among transportation planners around
11 the world. This study assesses the familiarity and use of the concept and metrics, and the
12 motivations and barriers to using accessibility metrics in policy and practice. This study is of
13 relevance to researchers, planners and policy-makers wishing to foster accessibility-based
14 planning approaches.

15 LITERATURE REVIEW

16 Accessibility, defined as the ease of reaching destinations (6), is one of the most comprehensive
17 performance measures of land use and transportation systems (10). As such, accessibility reflects
18 the multiple benefits provided by land use and transportation systems (11). For example, greater
19 accessibility is associated with higher land values (10, 12, 13) and employment rates (14-19), as it
20 provides residents with greater access to a variety of opportunities. Increased accessibility also
21 reduces the risks of social exclusion (4, 6) and improves the quality of life of individuals (1).
22 Furthermore, accessibility by transit is associated with greater transit use (20, 21), and can thus
23 help in reducing car use and the resulting greenhouse gas emissions (22, 23). As accessibility
24 captures multiple dimensions, it is increasingly put forward as a key element of a transportation
25 planning (23-25).

26 Multiple accessibility indicators have been developed to capture the benefits of land use
27 and transportation systems (26-28), ranging from individual accessibility metrics to location-based
28 accessibility metrics (29). Location-based metrics are most commonly used in planning as they
29 provide a comprehensive measure of regional accessibility. These metrics indicate the ease of
30 accessing destinations from a specific location and accounts for the spatial distribution of
31 opportunities (for example, jobs or healthcare services) and the ability to move from one place to
32 another (26). The transport component, the ability to move from one place to the other, is generally
33 mode specific and based on travel time or distance (26, 30-33). A common location-based metric
34 is a measure of cumulative-opportunities, which counts all opportunities that can be reached within
35 a travel costs threshold. For example, the number of jobs that are within 45 minutes of travel times
36 by transit from a specific place is used to assess the access to jobs by public transit. Another
37 common metric is the gravity-based measure, which discounts opportunities based on a distance-
38 decay function. Accordingly, opportunities that are located farther (by distance or time) receive
39 less weight than closer opportunities. While this measure is more reflective of travel behavior,
40 cumulative-opportunities are simpler to generate, interpret and communicate.

41 Although accessibility has been extensively researched, its inclusion in transportation
42 planning is limited; the mobility-based approach, which largely focuses on traffic fluidity and
43 travel speeds, still dominates transportation planning (7-9). Through a detailed assessment of four
44 transportation plans in California, Handy (34) found that although accessibility emerged as a
45 concern in most plans, these plans were still dominated by a mobility-oriented paradigm. Similarly,
46

1 in an assessment of 42 American transportation plans, Proffitt, Bartholomew, Ewing and Miller
2 (7) found that less than a quarter of the plans measured success based on accessibility indicators.
3 In the United Kingdom (UK), the national government has established a framework for
4 accessibility planning. However, the broad and flexible guidelines resulted in a “misused” and
5 “abused in practice” of accessibility (8). Research has also shown that there is a lack of consensus
6 on the accessibility indicators to be used in transportation evaluations (8, 35). While many studies
7 have focused on accessibility metrics and indicators, no study, to our knowledge, has looked into
8 the use of accessibility metrics by practitioners. Yet, understanding how and to what extent
9 accessibility indicators are used in practice is essential to bridge the gap between planning and
10 research, and to foster the implementation of accessibility-oriented planning approaches.

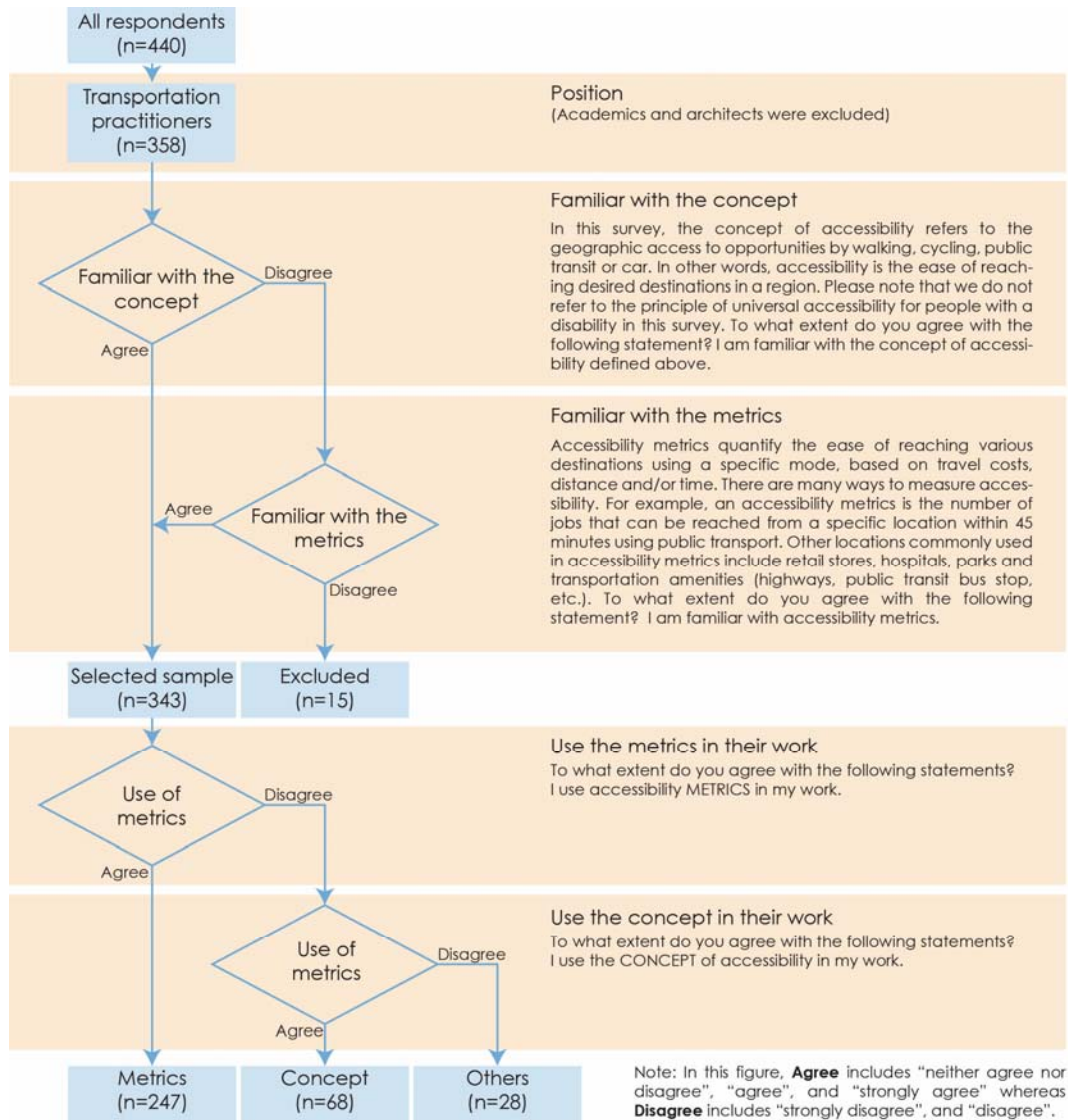
11 **DATA AND METHODOLOGY**

12 To better understand the factors influencing the implementation of accessibility metrics, a survey
13 was conducted among land use and transportation practitioners. The survey was conducted on-
14 line, and disseminated through various mailing lists and social media groups of planners. The main
15 goal was to identify planners that use accessibility in their work and determine the motivations and
16 barriers behind implementing accessibility metrics.

17 The selection and subdivision of respondents included in this study are presented in
18 FIGURE 1. In total, 440 fully completed surveys were collected. As the objective was to focus on
19 transportation planning practice, academics and architects were excluded from the original sample.
20 Furthermore, all respondents were asked about their familiarity and use of the concept and metrics
21 (see detailed questions in FIGURE 1, right). Respondents that were neither familiar with the
22 concept nor the metrics were removed (15 respondents). In total, 343 nonacademic respondents
23 were included in the final sample, of which 274 were from North America, 45 from Europe, and
24 24 from other regions. These respondents were then divided in three subsamples, based on whether
25 they used the concept and metrics of accessibility in their work. The three subsamples are as
26 follows:

- 27 A. Respondents that used accessibility metrics in their work (Metrics; N=247).
- 28 B. Respondents that did not use accessibility metrics in their work, but that did use the concept
29 of accessibility (Concept; N=68).
- 30 C. Respondents that did not use the concept of accessibility, nor the metrics, in their work
31 (Others; N=28).

32 The survey included general questions about the respondents’ work context and their
33 perception of decision-making based on accessibility metrics. Furthermore, the first subsample
34 (respondents that used metrics) was asked specific questions about the design and implementation
35 of metrics, whereas the second subsample (respondents using the concept, but not the metrics) was
36 asked specific questions about their use of the concept, and reasons for not using metrics.
37 Throughout the survey, agreement questions used a 5-point Likert scale (1-“strongly disagree”, 2-
38 “disagree”, 3-“neither agree nor disagree”, 4-“agree”, 5-“strongly agree”). In the analysis of the
39 results, respondents that selected “agree” and “strongly agree” were aggregated together as
40 “agree”, and respondents that selected “disagree” and “strongly disagree” were aggregated
41 together as “disagree”. Respondents who selected “neither agree nor disagree” were considered as
42 “neutral”.
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FIGURE 1 Description of the Sample

The characteristics of the 343 respondents included in our sample are presented in FIGURE 2. Most respondents worked in the public sector (73%), and the majority were planners (62%). Respondents were mainly working within a governmental organization, a planning organization, or a consulting agency, while very few worked for a public transport providers. Furthermore, the majority of respondents were involved with transportation projects (public transit, walking, cycling, driving, parking or land use) at the local or regional scale.



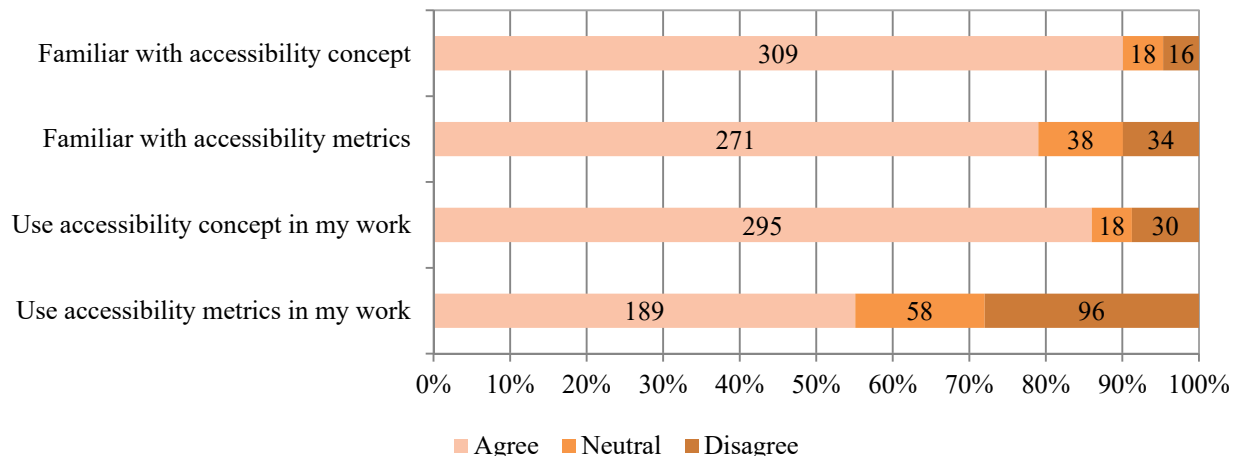
1 Sector of Employment
 2 **FIGURE 2 Profile of the Respondents, by Sector of Employment, Position, and**
 3 **Organization**

4
 5 **RESULTS From Knowledge to Implementation**

6 All respondents were asked about whether they were familiar with the accessibility concept and
 7 metrics, and whether they used them in their work. The patterns are similar across sectors of
 8 employment, positions, and organizations, and thus presented in an aggregated manner in FIGURE
 9 3. FIGURE 3 illustrates the proportion of respondents that agreed with each of the statements. In
 10 all cases, more than 50% of the respondents agreed with the statement, suggesting that the majority
 11 of respondents are familiar with the concept and metrics, and use them in their work. This high
 12 penetration rate is partially explained by the non-random selection of participants. In fact, there
 13 was an effort to disseminate the survey to practitioners who do work with accessibility, as the aim
 14 was to understand how accessibility is designed and implemented. Furthermore, practitioners with
 15 a prior knowledge of accessibility were more likely to fill out the survey.

16 Nevertheless, the comparative assessment of the familiarity and use of the concept and
 17 metrics sheds light on current practices. Interestingly, 90% of the respondents are familiar with the
 18 concept of accessibility and 86% of the respondents use the concept of accessibility in their work.
 19 This indicates that almost all the respondents that are familiar with the concept use it in their work.
 20 Not surprisingly, a slightly lower proportion of respondents (78%) are familiar with the metrics.
 21 Yet, only 55% of these respondents use them in their work. There is an important discrepancy
 22 between the number of respondents that are familiar with the metrics and the ones who use it.
 23 These findings suggest that although practitioners are familiar with the metrics, some factors
 24 prevent them from implementing them in their workplace. These factors are further explored in
 25 the next section.

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2 **FIGURE 3 Familiarity with and Use of Accessibility (Concept and Metrics)**

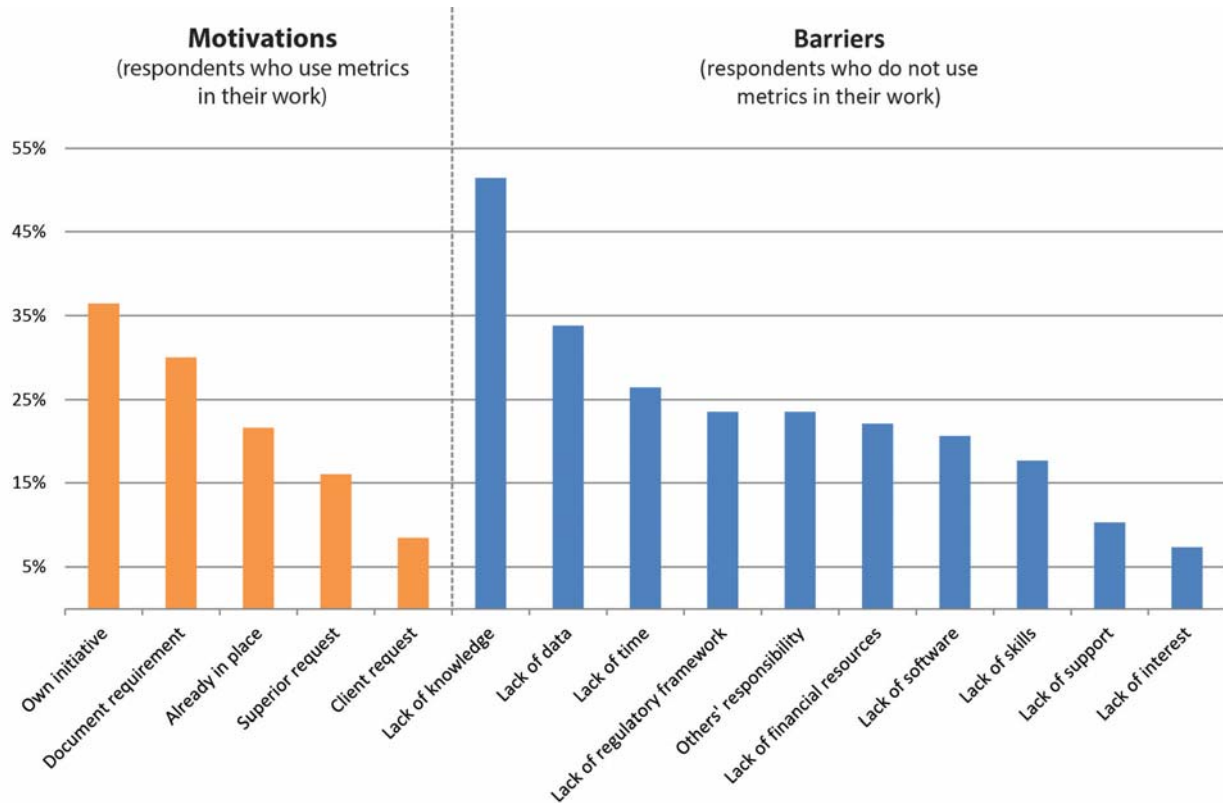
3 *Motivations and Barriers*

4 To better understand the factors underlying the use of the accessibility concept and metrics,
5 respondents were asked about the reasons for which they generated accessibility metrics. For those
6 who did not use accessibility metrics in their work, we asked them about the barriers preventing
7 it. FIGURE 4 shows the motivation for using accessibility metrics (among respondents who use
8 the metrics) and the barriers to using them (among respondents who used the concept, but not the
9 metrics).

10 Only 22% of the respondents that used accessibility metrics in their work stated that the
11 metrics were present as a tool prior to their arrival. Similarly, few respondents (16%) stated that it
12 was a request from their superior. These results suggest that, although most practitioners are
13 familiar with the concept and metrics, accessibility is not widely implemented as a planning tool
14 in our sample. In contrast, the main motivation for using the metrics comes from the respondent's
15 initiative: 36% of the respondents stated that the generation of accessibility metrics was their own
16 initiative. This indicates that promoting accessibility among practitioners can be an efficient way
17 to foster the implementation of accessibility metrics as a planning tool. Furthermore, 30% of the
18 respondents indicated that the generation of metrics resulted from a requirement from a planning
19 document. Accordingly, integrating accessibility indicators in planning documents can help
20 practitioners in implementing accessibility metrics in their work. Finally, a request from a client
21 is the least important motivation. This could be due to the low representativeness of respondents
22 from the private sector in our sample.

23 Interestingly, the barrier most frequently stated by respondents who did not use
24 accessibility metrics in their work is the lack of knowledge (52%). These findings highlight the
25 need to educate future and current practitioners about accessibility metrics, especially since the
26 survey revealed that most metrics were generated as a result of the respondents' own initiative.
27 Furthermore, another important barrier is the lack of data to generate accessibility metrics (34%).
28 Yet, many accessibility metrics can be generated through open-source data, for example using
29 General Transit Feed Specification data, and open Geographic Information System (GIS) such as
30 QGIS. With respect to the location of jobs or other opportunities, these can be obtained from
31 various sources. Accordingly, the lack of data could also be addressed by educating practitioners
32 about how to collect adequate data to generate accessibility metrics, and about the different data
33 sources and tools that are available in different regions. Finally, it is also interesting to note that

1 the lack of interest (7%) and lack of support (10%) are the least commonly stated barriers to
 2 implementing accessibility metrics. Practitioners hence do not appear to be reluctant to
 3 implementing accessibility-based approaches. Rather, knowledge factors prevent them from
 4 generating accessibility metrics.
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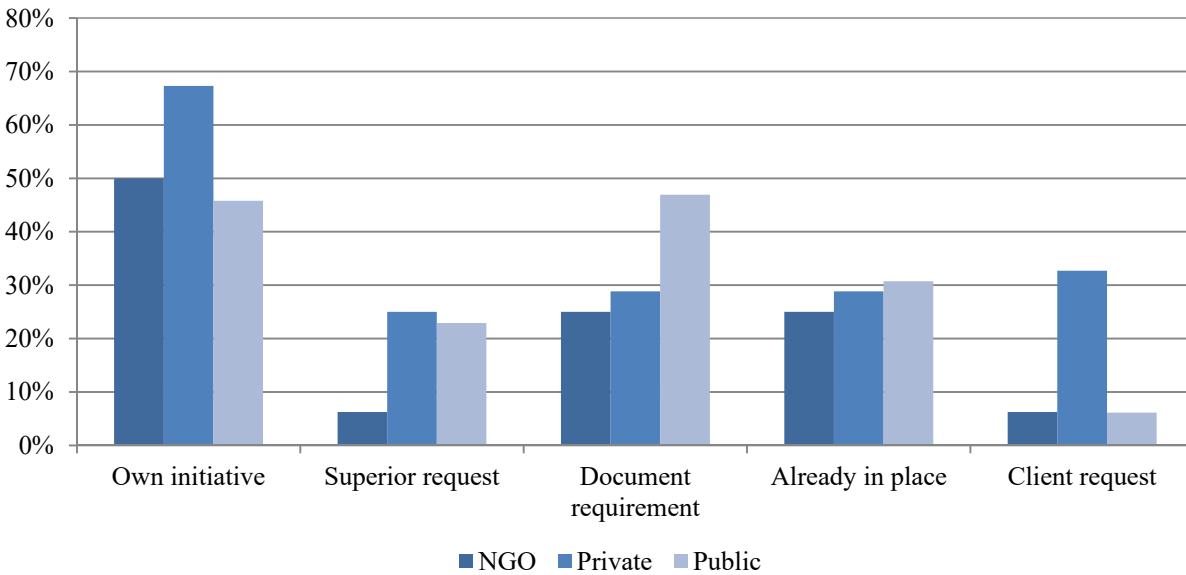


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 7 **FIGURE 4 Motivations and Barriers to the Use of Accessibility Metrics**

8 FIGURE 5 presents the motivations for using accessibility metrics, by sector of
 9 employment. Not surprisingly, the proportion of respondents who stated that the generation of
 10 accessibility metrics was their own initiative is greater for respondents from the private sector,
 11 whereas a requirement from a planning document is most frequently cited by respondents from the
 12 public sector. The generation of accessibility metrics due to a requirement from a planning
 13 document is in fact the most commonly cited reason in the public sector (47% of the respondents),
 14 highlighting the potential influence of planning documents on practitioners from the public sector.
 15 With respect to the private sector, a request from a client is the second most commonly cited
 16 motivation (33% of the respondents). As transportation planning clients are often public entities
 17 such as municipalities or regional governments, planning documents can also play an important
 18 role here. Indeed, having clear accessibility objectives and indicators can support the integration
 19 of accessibility metrics in outsourcing contracts.

20 Taken together, the findings suggest that practitioners are open to using accessibility as a
 21 tool, but that the lack of knowledge prevents some of them from doing so. Accordingly, more
 22 effort is needed to train current and future practitioners about the generation of accessibility
 23 metrics. Furthermore, introducing accessibility indicators in planning documents can effectively
 24 support the dissemination of accessibility metrics in the public and private sectors.
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3 **FIGURE 5 Motivations to the Use of Accessibility Metrics, by Sector of Employment**4 *Accessibility in Planning Documents*5 With respect to planning documents, respondents were asked about the presence of accessibility
6 in the planning documents that they work with. The following questions were asked:

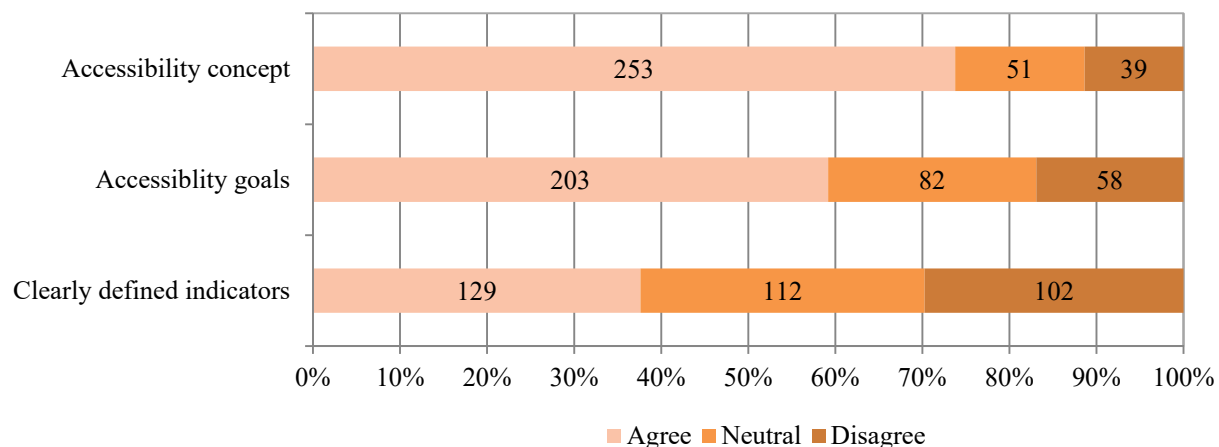
7 To what extent do you agree with the following statements?

- 8 • The concept of accessibility is included in the planning documents of the region I work
9 in.
- 10 • Accessibility is stated as a main goal in the planning documents of the region I work in.
- 11 • Clearly defined accessibility indicators are included in the planning documents of the
12 region I work in.

13 Around 74% of the respondents stated that the concept of accessibility is included in the planning
14 documents of their region, whereas 59% indicated that accessibility was stated as a goal (FIGURE
15 6). Furthermore, only 38% of them agreed that clearly defined accessibility indicators were present
16 in the planning documents. These findings are in line with previous studies that found that although
17 accessibility is included in most planning documents, few of them have clear accessibility goals
18 and indicators that guide the decision-making processes (7, 34). Yet, the presence of accessibility
19 requirements in planning documents foster the use of accessibility metrics by practitioners.
20 Accordingly, it is essential to establish clear accessibility guidelines in regional and metropolitan
21 transportation plans.

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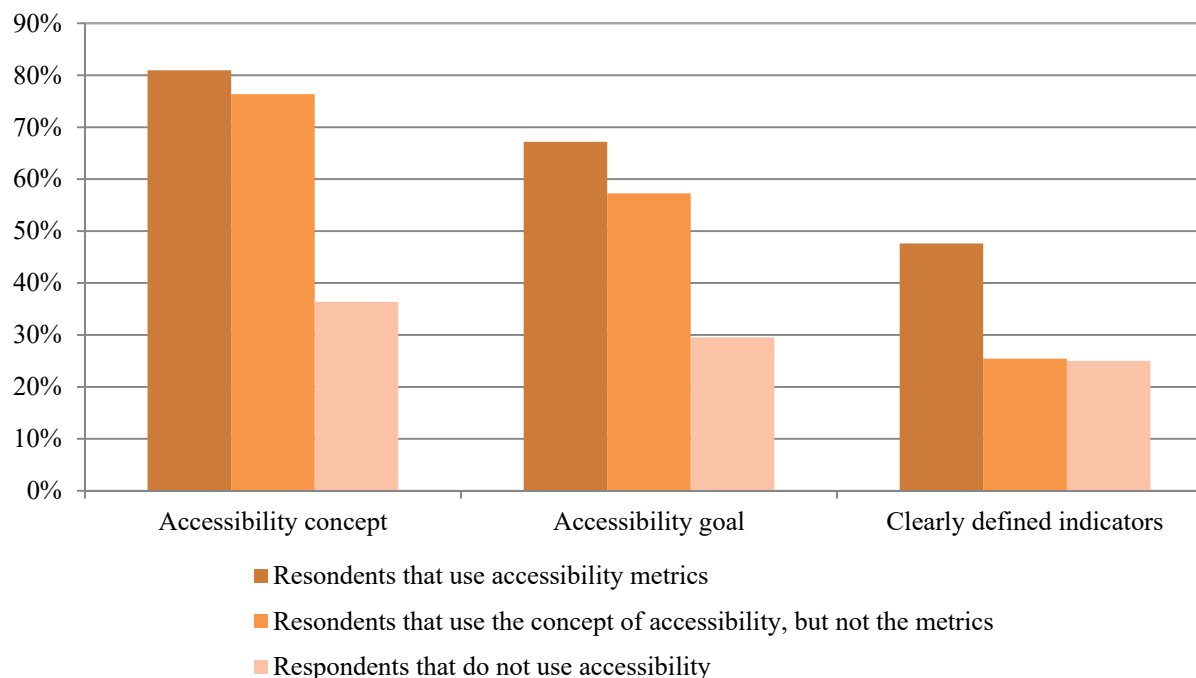
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2 **FIGURE 6 Presence of Accessibility in Planning Documents**

3 The presence of accessibility in planning document is further explored by comparing the
4 results between respondents that used accessibility metrics, respondents that used the concept but
5 not metrics, and respondents that did not use accessibility in their work. Note that, for the purpose
6 of this analysis, respondents who selected “neither agree nor disagree” with respect to the use of
7 the concept or metrics were not considered as respondents that did use the concept or metrics,
8 respectively.

9 FIGURE 7 illustrates the proportion of respondents that agreed with each statement, for
10 each group. Respondents that do not use accessibility in their work agreed in the lowest proportion
11 that the concept of accessibility is included in the planning documents they work with, and that
12 accessibility is stated as a goal. These results suggest that the presence of accessibility, and its
13 statement as a goal, are associated with a greater use of accessibility (both in terms of the concept
14 and metrics). Note that a statistical difference test (Tukey HSD) was performed to compare the
15 average Likert scale values (from 1 to 5) between groups. Statistical differences (at the 90%
16 confidence level) were observed between respondents that do not use accessibility, and the ones
17 that do (metrics or concept), further supporting the results discussed above.

18 With respect to indicators, the proportion of respondents that agreed that clear accessibility
19 indicators were included in the planning documents is much higher among respondents who used
20 accessibility metrics in their work. In this case, statistical differences in the average Likert scale
21 values were found between respondents that used metrics and the two other groups. These results
22 support the finding that the presence of clear accessibility indicators in planning documents foster
23 the implementation of accessibility metrics by practitioners. This is once again not a surprising
24 result, but highlights the strong importance of having clearly defined indicators in planning
25 documents. Whereas as goals are associated with respondents that use accessibility in general,
26 clear indicators are more strongly linked to the use of metrics.

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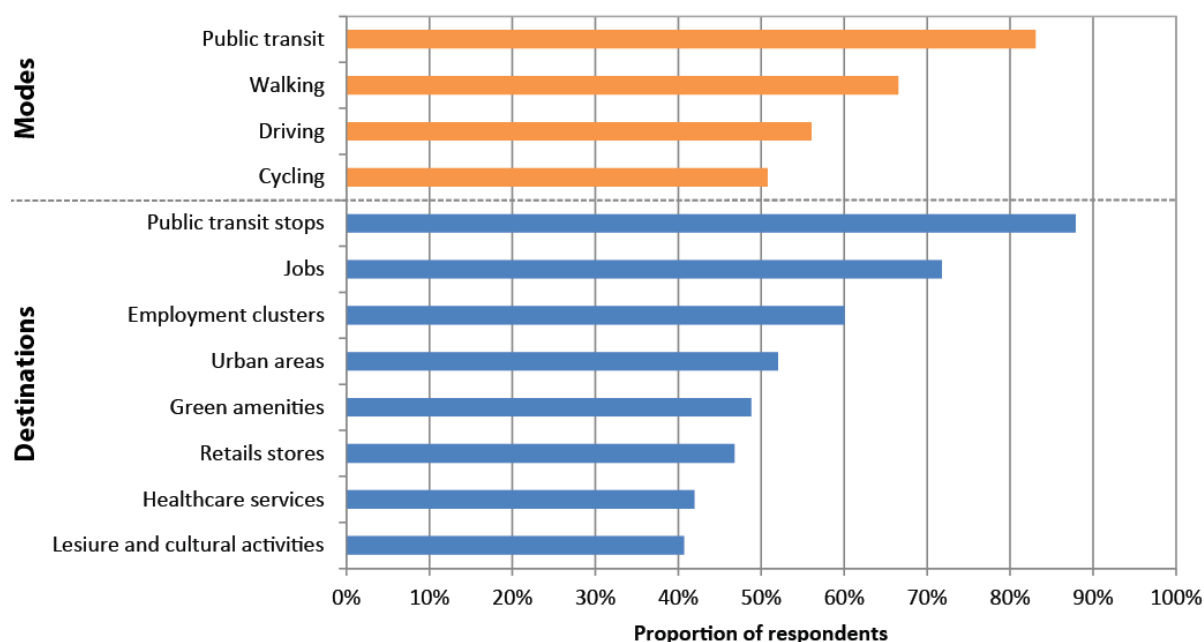
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2 **FIGURE 7 Presence of Accessibility in Planning Documents, by Use of Accessibility**

3 *Types of Accessibility Metrics*

4 In terms of accessibility indicators, the survey investigated what types of metrics are used by
5 practitioners. As we can see in FIGURE 8 and FIGURE 9, public transit is dominant, both in terms
6 of modes assessed and types of destinations (access to public transportation stops). Access to
7 public transit is a measure of service coverage that is widely used by public transit providers and
8 in metropolitan transportation plans (36-38). Yet, such measure is only one component of
9 accessibility, as it does not include the location of opportunities. For example, an individual can
10 have good access to a public transit stop, but the bus line serving this stop might not lead to a high
11 number of opportunities. To effectively capture the ease of reaching opportunities, access to
12 destinations must be considered. In this regard, access to jobs and employment clusters, although
13 not as commonly used as access to public transit, is used by a vast majority of respondents (72%
14 and 60% respectively), while access to other types of destinations (green amenities, retail stores,
15 healthcare services, and cultural and leisure activities) is used in a lower proportion (between 40%
16 and 50%).

17 In terms of modes, access by public transit is used by the greatest number of respondents.
18 Since the availability of GTFS data, accessibility by transit has become a major trend of
19 accessibility research (20, 39). Whereas cycling and walking accessibility is not as commonly
20 assessed by practitioners, van Wee (35) recently emphasized the need for accessibility research
21 focusing on active transportation modes. Although there seems to be emerging research on this
22 topic (40, 41), the gaps in research likely explains the low penetration of active mode accessibility
23 indicators.

24



1
2 **FIGURE 8 Accessibility Metrics – Modes and Destinations**

3 Respondents were also asked to select the types of metrics that they used in their work. As
4 we can see in FIGURE 9, the most commonly used metrics are travel time proxies. In line with
5 these findings, a recent study found that travel time proxies are also widely used in metropolitan
6 transportation plans across the United States (7). While reduced travel times often reflect greater
7 accessibility in the short term, they can also result in greater travel distances and costs in the long
8 run (42). If gains in travel times are due to road expansions and increased travel speeds, the
9 interventions are likely to yield greater dispersion of destinations, as a result of induced demand
10 and land use development (43, 44). Such mobility-oriented development typically leads to greater
11 travel costs, increased driving, and greater discrepancies in accessibility. Accordingly,
12 independent mobility goals might not fully address the broader societal goal of transportation of
13 providing access to destinations within reasonable time and costs (24, 42, 44). While the focus on
14 mobility has favoured urban sprawl in the last decades, a focus on accessibility is more likely to
15 provide all individuals with more options, and to reduce the need to drive (44).

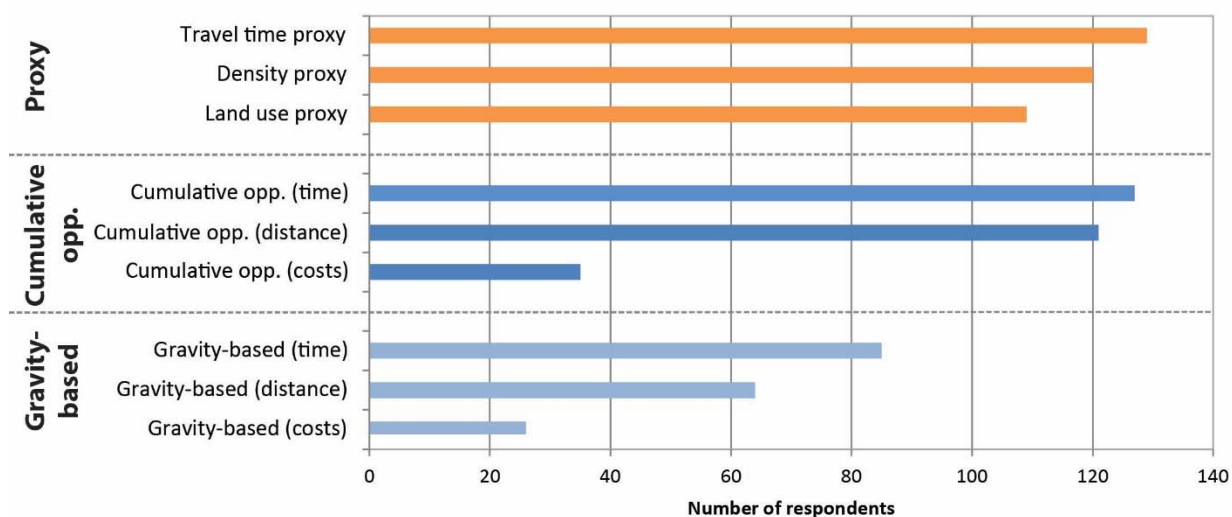
16 In this regard, measures of access to destinations, such as cumulative-opportunity or
17 gravity-based metrics, must be used in addition to travel time proxies to capture the potential access
18 to destinations. Yet, out of the 129 practitioners that used travel time as a proxy, 43 respondents
19 did not use access to destinations metrics as a complementary indicator (cumulative-opportunity
20 or gravity-based). The single use of travel time proxies can result in a bias towards mobility-based
21 approaches, rather than ensuring a reasonable access to destinations for all (24).

22 Density and land use mix proxies are also commonly used by practitioners as shown in
23 FIGURE 9. Increasing density and mix of use has the potential to increase access to destinations,
24 and is thus a relevant metric to address planning for accessibility (42). Yet, it does not account for
25 the transport component.

26 Cumulative-opportunity and gravity-based metrics directly reflect the ease of reaching
27 destinations and account for the land use and the transport component. Cumulative-opportunity

1 metrics are used in greater proportion by practitioners, as can be seen in FIGURE 9. While gravity-
 2 based metrics more closely reflect travelers' perceptions of time (11), they are more difficult to
 3 generate and to communicate. In contrast, cumulative-opportunity measures are easier to generate
 4 and to interpret (26), and thus most commonly used in planning. Cumulative-opportunity metrics
 5 are highly correlated with gravity-based metrics, and thus represent appropriate measures of
 6 regional accessibility (10, 45).

7 The results indicate that accessibility metrics used by practitioners are generally based on
 8 travel time or distance. These thresholds are also largely used in accessibility research, while a few
 9 studies have incorporated generalized costs (46-48). Although generalized costs better represent
 10 the time and monetary values associated with a trip, metrics based on time generally adequately
 11 reflect accessibility, as they are highly correlated with mode choice (49, 50).



12
 13 **FIGURE 9 Types of Accessibility Metrics Used by Practitioners**

14 In sum, among the 189 practitioners who agreed (“agree” or “strongly agree”) that they use
 15 accessibility metrics in their work, 22% (42 respondents) of them did not use indicators that reflect
 16 access to destinations. 40 respondents merely used proxies (travel time, density, land use mix) and
 17 2 respondents only used access to transit metrics. Overall, 43% of all respondents (n=343) use
 18 metrics reflecting access to destinations, while 55% stated that they use accessibility metrics in
 19 their work (FIGURE 3). Taken together, these findings reiterate the importance of training current
 20 and future practitioners about accessibility metrics and having clearly defined accessibility
 21 indicators in planning documents. More specifically, a clear distinction should be made between
 22 mobility and accessibility, and access to destinations should be emphasized. This is, however,
 23 often lacking in planning documents, as found by Handy (34).

24

1 Accessibility and Decision-Making

2 Another important component of accessibility metrics is their potential to influence decision-
3 making. In this regard, respondents were asked about the relevance of accessibility metrics to
4 planning and decision-making. Results are presented in

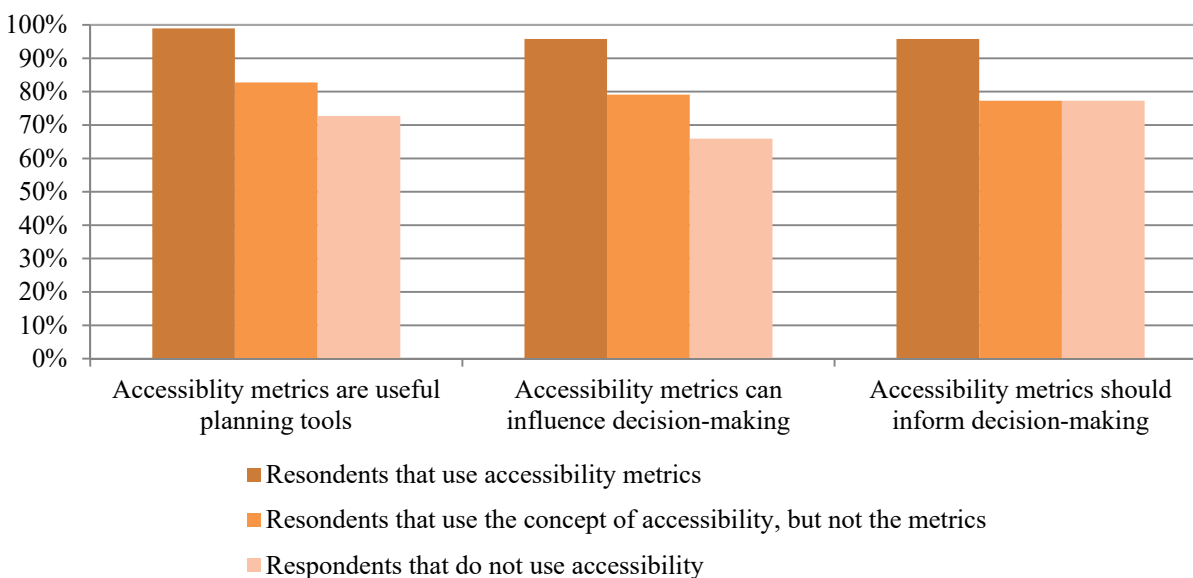
5 FIGURE 10. As in the previous analysis, respondents who selected “neither agree nor disagree”
6 with respect to the use of the concept or metrics were not considered as respondents that did use
7 the concept or metrics, respectively.

8 As we can see in

9 FIGURE 10, more than 95% of the respondents who do use accessibility metrics agreed
10 that accessibility metrics can and should influence decision-making, and that accessibility metrics
11 are useful planning tools. The proportion of respondents that agreed that accessibility metrics can
12 and should influence decision-making is lower, however, among respondents who do not use
13 accessibility metrics, especially those who do not use the concept nor the metrics. Although not
14 surprising, this finding could suggest that as more practitioners use accessibility-based approaches,
15 a greater proportion will perceive accessibility metrics as a potential planning tool to inform
16 decision-making. It could also reflect that practitioners who perceive accessibility as useful for
17 decision-making are more inclined to using accessibility metrics.

18 For all three statements, statistical differences were observed in the average Likert scale
19 values between respondents that use accessibility metrics and the two other groups, whereas the
20 difference between the respondents that use the concept (not the metrics), and respondents that do
21 not use accessibility were not statistically different.

22



23

24 FIGURE 10 Relevance of Accessibility Metrics to Planning and Decision-Making

25 Respondents who did use accessibility in their work were also asked for what purpose they
26 used the concept or the metrics of accessibility. Interestingly, in both cases, the main purpose was
27 for decision-making (59% for the concept and 47% for the metrics). These findings are coherent
28 with the results discussed above. Clearly, there is an agreement among most practitioners that
29 accessibility is an important component of decision-making.

30

1 CONCLUSION

2 This study investigated the design and implementation of accessibility metrics by land use and
3 transportation practitioners. It has shown that there is an important gap between the knowledge of
4 the concept of accessibility, and its implementation into accessibility metrics. While most
5 practitioners surveyed are familiar with the concept of accessibility, a much lower proportion of
6 respondents (55%) stated that they use accessibility metrics in their work. Furthermore, only 43%
7 of the respondents used accessibility metrics that actually reflect the ease of reaching destinations.

8 Whereas lack of support and interest does not appear to be a major obstacle to
9 implementing accessibility metrics, lack of knowledge and data are highlighted as the main
10 barriers. Accordingly, educating current and future practitioners on the generation of accessibility
11 metrics and data collection methods is essential, especially since the generation of metrics is
12 mainly initiated by the practitioners' themselves in most cases. The study also reveals that the
13 types of metrics most commonly used by practitioners, access to public transit and travel time
14 proxies, do not reflect the ease of reaching destinations. These results further highlight the need to
15 educate practitioners, especially with respect to the distinction between the different types of
16 metrics. Furthermore, including clear accessibility indicators could help promote the use of
17 accessibility metrics by practitioners. Planning document requirements are key motivations stated
18 by practitioners using accessibility metrics. Yet, most respondents, especially the ones that do not
19 use accessibility metrics, indicated that the planning documents of the region they work in do not
20 include clear accessibility indicators. Finally, the findings suggest that accessibility is used largely
21 for decision-making purposes, and that practitioners perceive accessibility as a relevant planning
22 tool that should guide decision-making processes. This is especially the case for respondents who
23 did use accessibility metrics in their work. A greater use of metrics by practitioners could thus
24 increase the perception that decision-making and policies should be informed by accessibility
25 metrics.

26 Educating practitioners and setting clear accessibility performance measures in planning
27 documents can support the implementation of accessibility metrics in policy and practice, which
28 can foster a shift from a mobility-based approach to an accessibility-based approach. National and
29 regional governments and organizations can play a key role in setting clear accessibility
30 requirements for transportation planning processes and planning documents. For example, the UK
31 has established a framework for *accessibility planning* to ensure that local transportation planning
32 authorities address issues of access to opportunities. As a result, accessibility is included in
33 transport plans at the local level. Yet, as discussed in the introduction, the flexibility of the
34 guidelines results in a multitude of interpretations that do not necessarily translate into access-to-
35 destinations indicators (8, 51). Similarly, the United States has federal transportation planning
36 requirements, one of which emphasizes the need to improve mobility and accessibility. As a result,
37 most regional transportation plans address accessibility in one way or another. However,
38 accessibility goals are rarely translated into accessibility indicators, and accessibility and mobility
39 are often used interchangeably (7, 34). In sum, national policy documents can influence local
40 transportation planning processes, but in order to ensure that accessibility indicators reflecting the
41 ease of reaching destinations are included, clear guidelines must be provided and a clear distinction
42 between mobility and accessibility must be made. Doing so can also contribute to educating
43 practitioners on accessibility indicators.

44 There are some limitations to this study. Firstly, the sample is largely composed of
45 practitioners from North America, and to a lesser extent, Europe. Further research could include a
46 greater number of respondents from a variety of countries. Doing so would allow comparative

1 analyses between different countries and regions and could help investigate the influence of
2 national and regional regulatory frameworks on practitioners. Secondly, this research focused
3 on location-based accessibility metrics, as they provide a regional assessment of accessibility and
4 are accordingly most commonly used in planning. Yet, further studies could look into personal
5 accessibility metrics.

6 Nevertheless, this study provides a first insight into general and potential measures that can
7 help practitioners in developing accessibility metrics. Overall, this research illustrates the need to
8 bridge the gap between accessibility research and practice. The findings are of relevance to
9 planners and policy makers wishing to support accessibility-oriented planning practices and are
10 helpful for researchers to better understand the challenges experienced by practitioners.
11

1 ACKNOWLEDGEMENTS

2

3 The authors want to thank Adie Tomer from Brookings Institution, Enrica Papa from the
4 University of Westminster, and Dea van Lierop from McGill University for providing feedback on
5 the survey. Thanks also to all researchers and practitioners who filled out the survey. This research
6 is funded by the Brookings Institution, the Social Sciences and Humanities Research Council and
7 the Natural Sciences and Engineering Research Council.

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