Online Survey: The gaps for using Lidars for AEP?

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Purpose

to assess the applicability of Lidars for the for wind resources assessment and siting of wind turbines

Process

Survey:

www.surveymonkey.com/r/DMZ653K

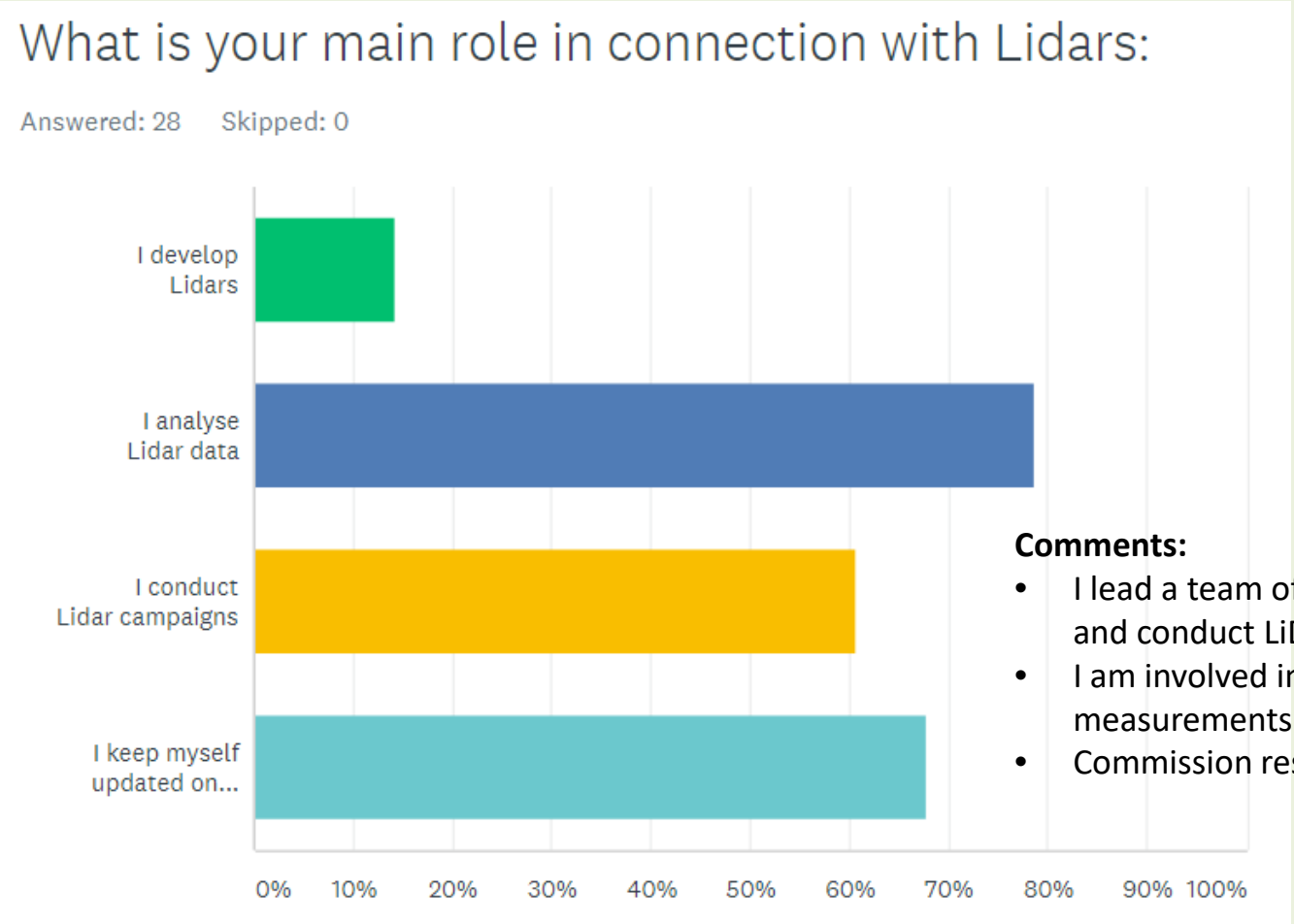
Distribution (20/9/2018):

Recastproject.dk, LinkedIn & workshop participants

Results (28/9/2018):

https://da.surveymonkey.com/results/SM-T5V5LNFHL/ - 30 participants

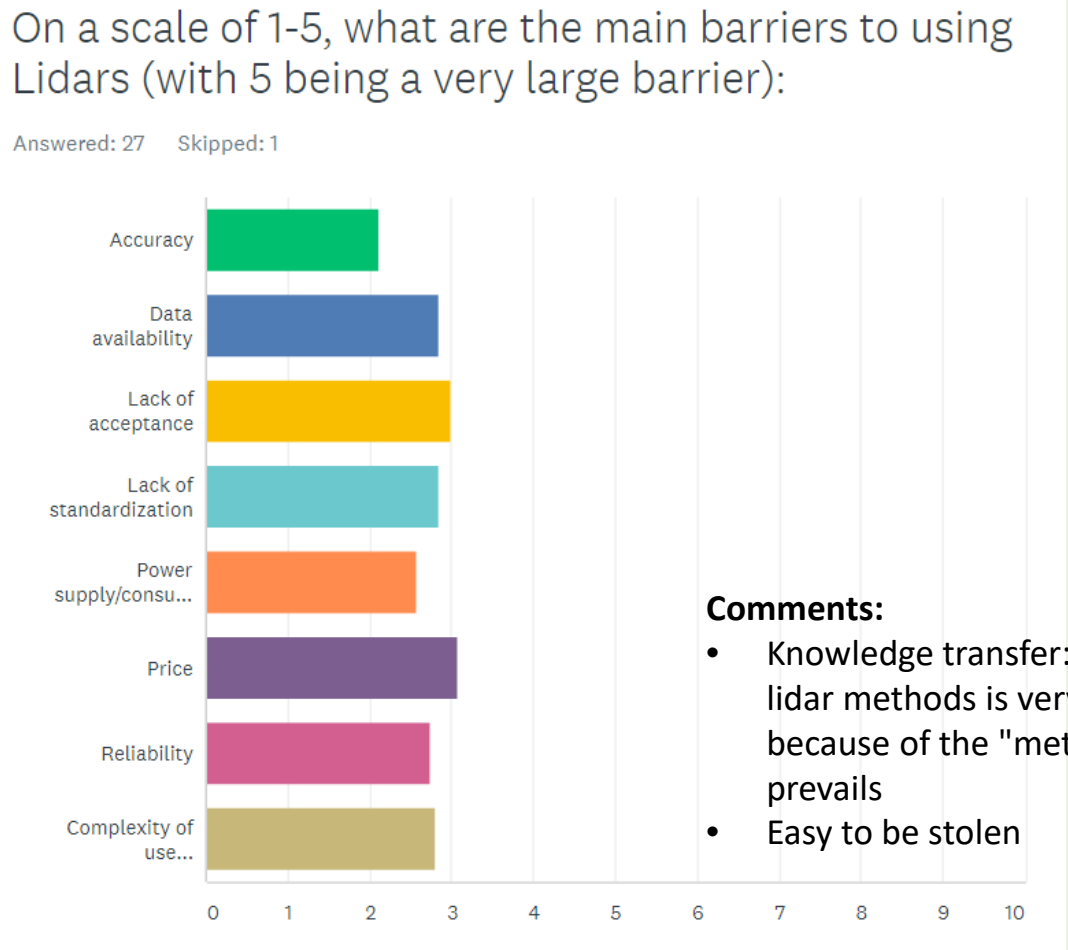
Q1: Survey Participants



Comments:

- I lead a team of analysts that analyse LiDAR data and conduct LiDAR campaigns.
- I am involved in standardisation (of Lidar measurements)
- Commission research on LiDAR

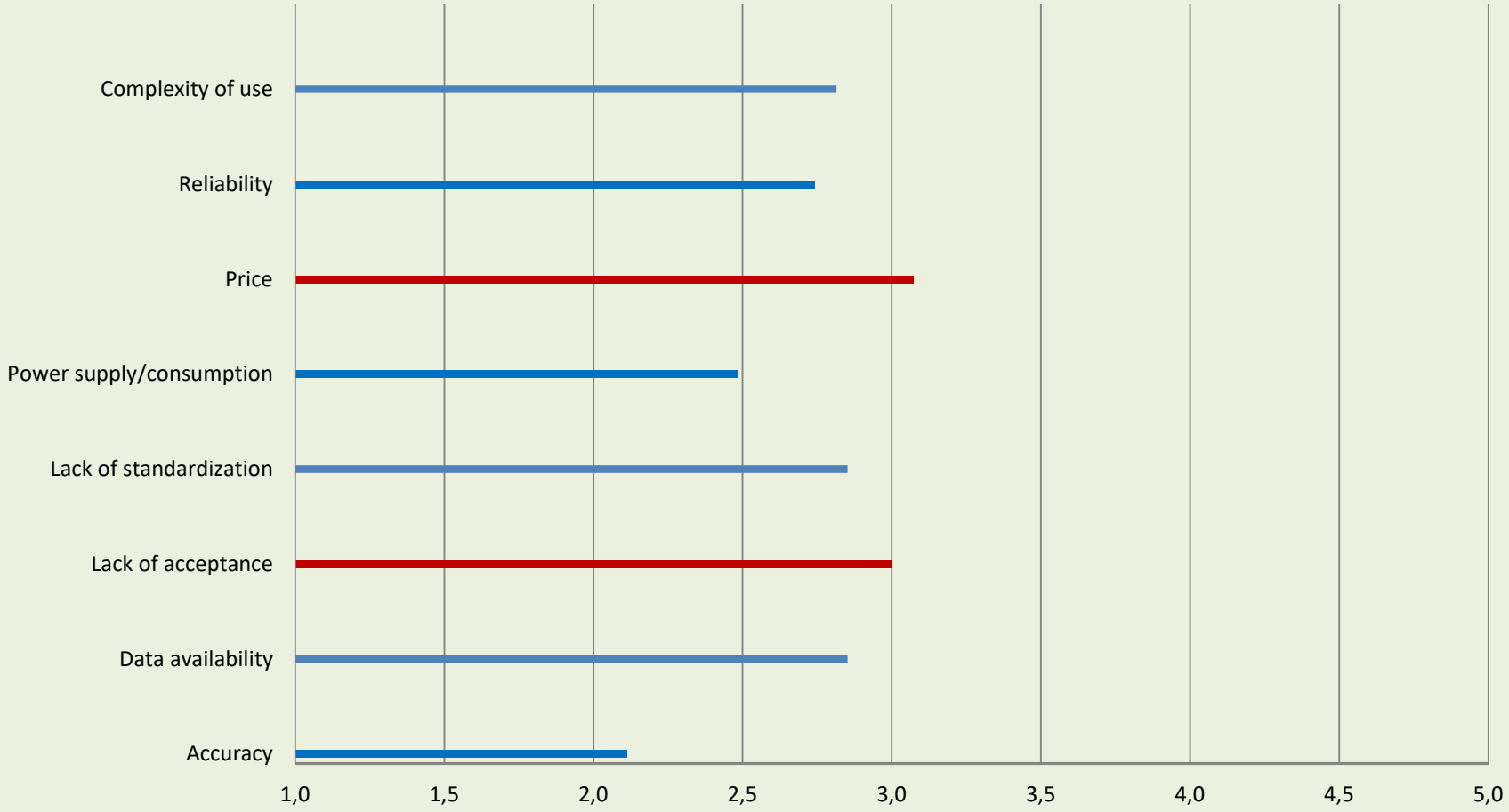
Q2: What are the barriers?



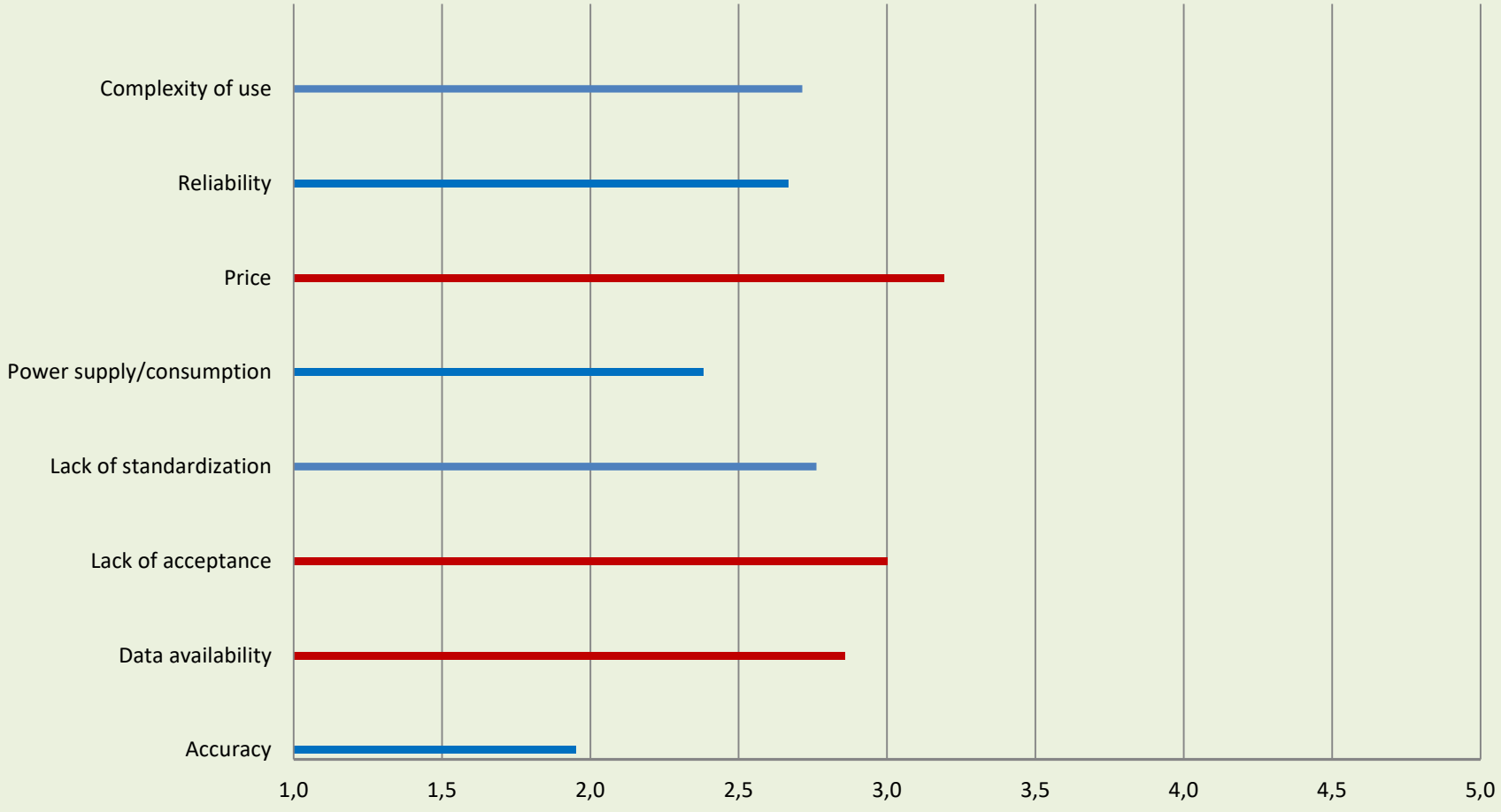
Comments:

- Knowledge transfer: familiarity with the full variety of lidar methods is very patchy in the industry and this is because of the "met mast" perspective that still prevails
- Easy to be stolen

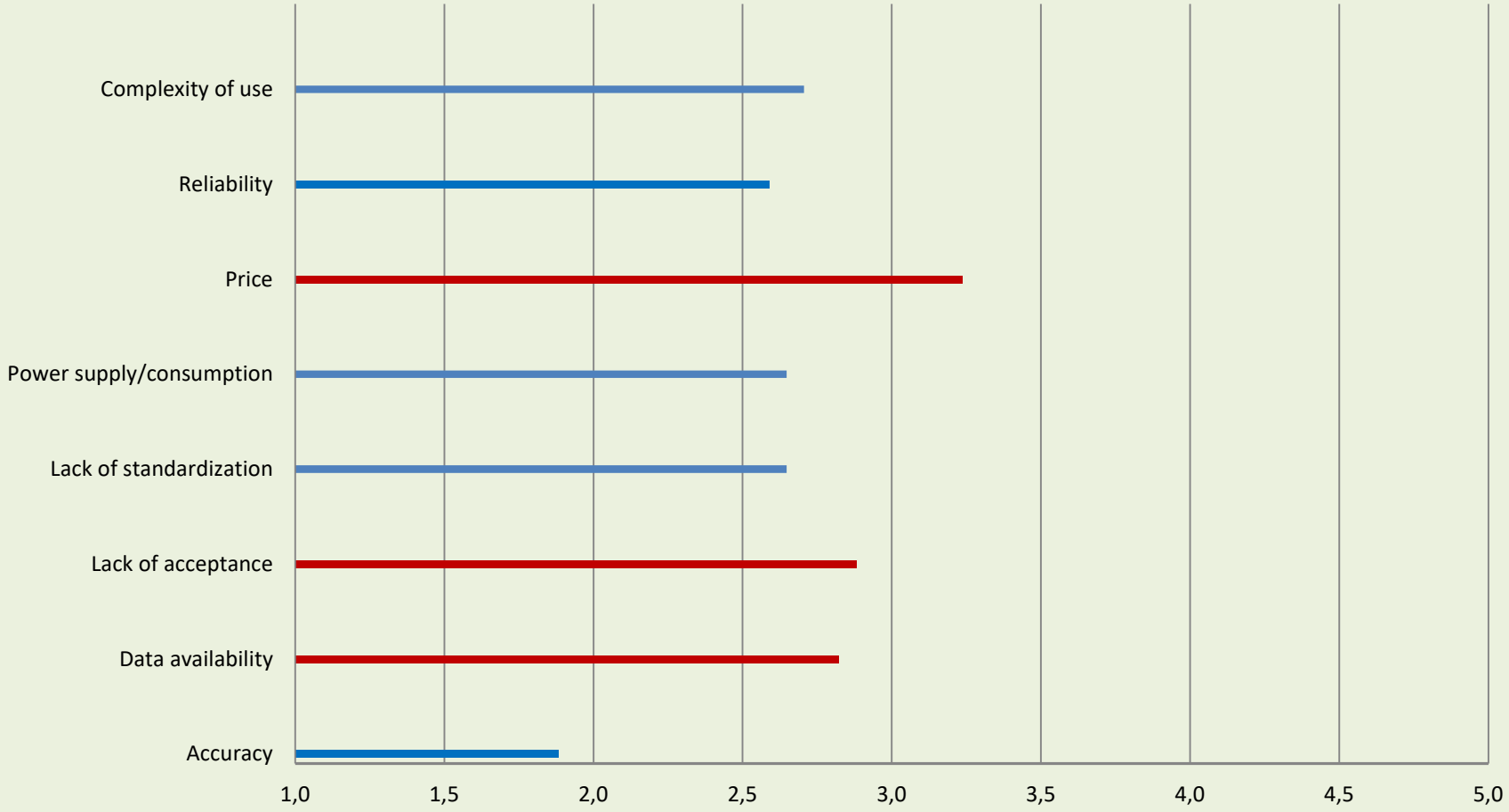
Barriers: ”All”(27)



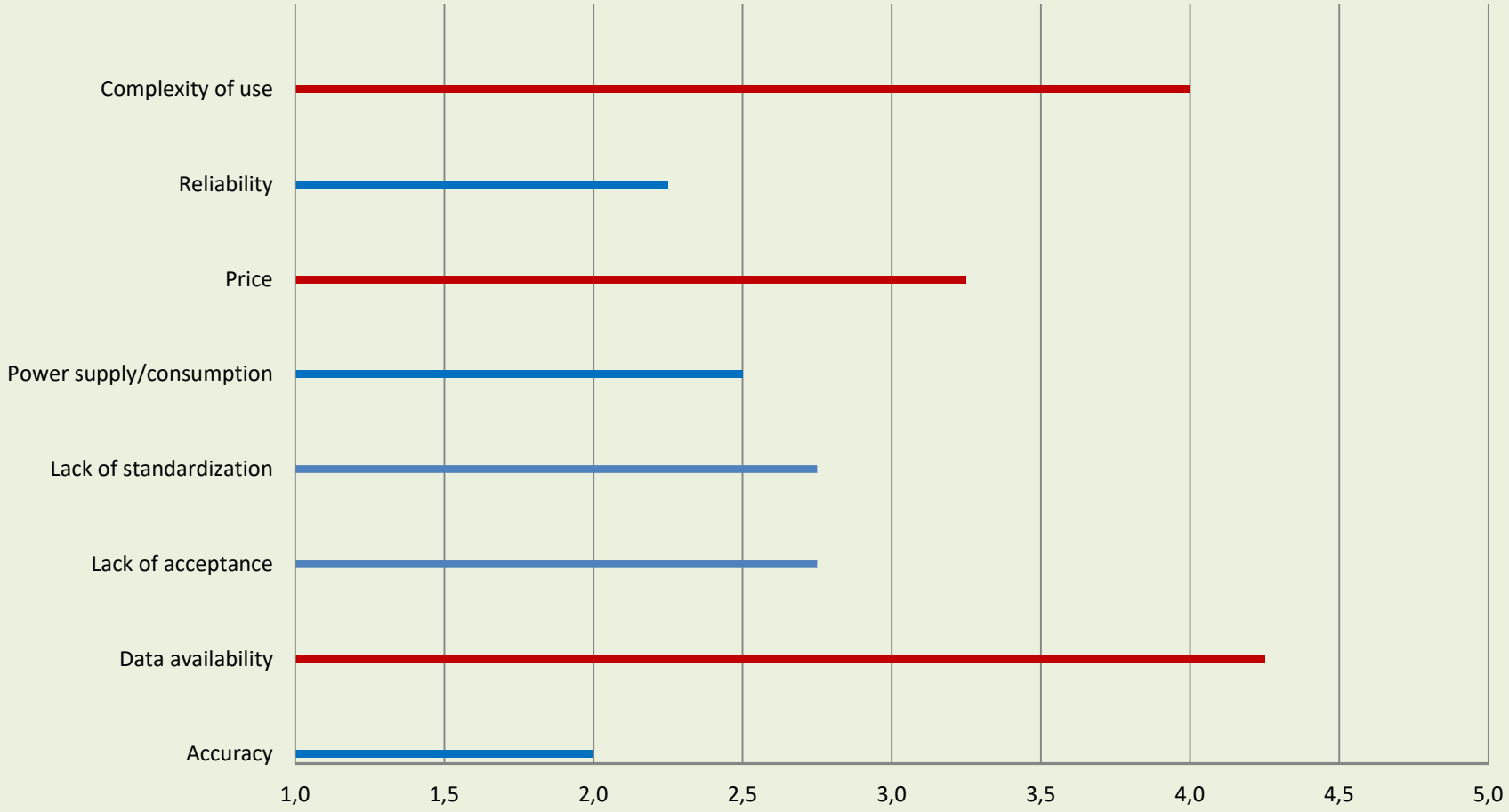
Barriers: ”Analysts” (21)



Barriers: ”Campaigners”(17)



Barriers: ”Developers”(4)



Barriers: Summary

Technology Barriers

- Price
- Data availability
- Complexity of use

Usage Barriers

- Lack of acceptance

familiarity with the full variety lidar methods – the metmast perspective

Q5+Q6: Measuring duration

What is the average duration of a typical Lidar campaign (actual measuring time)? (Number of days)

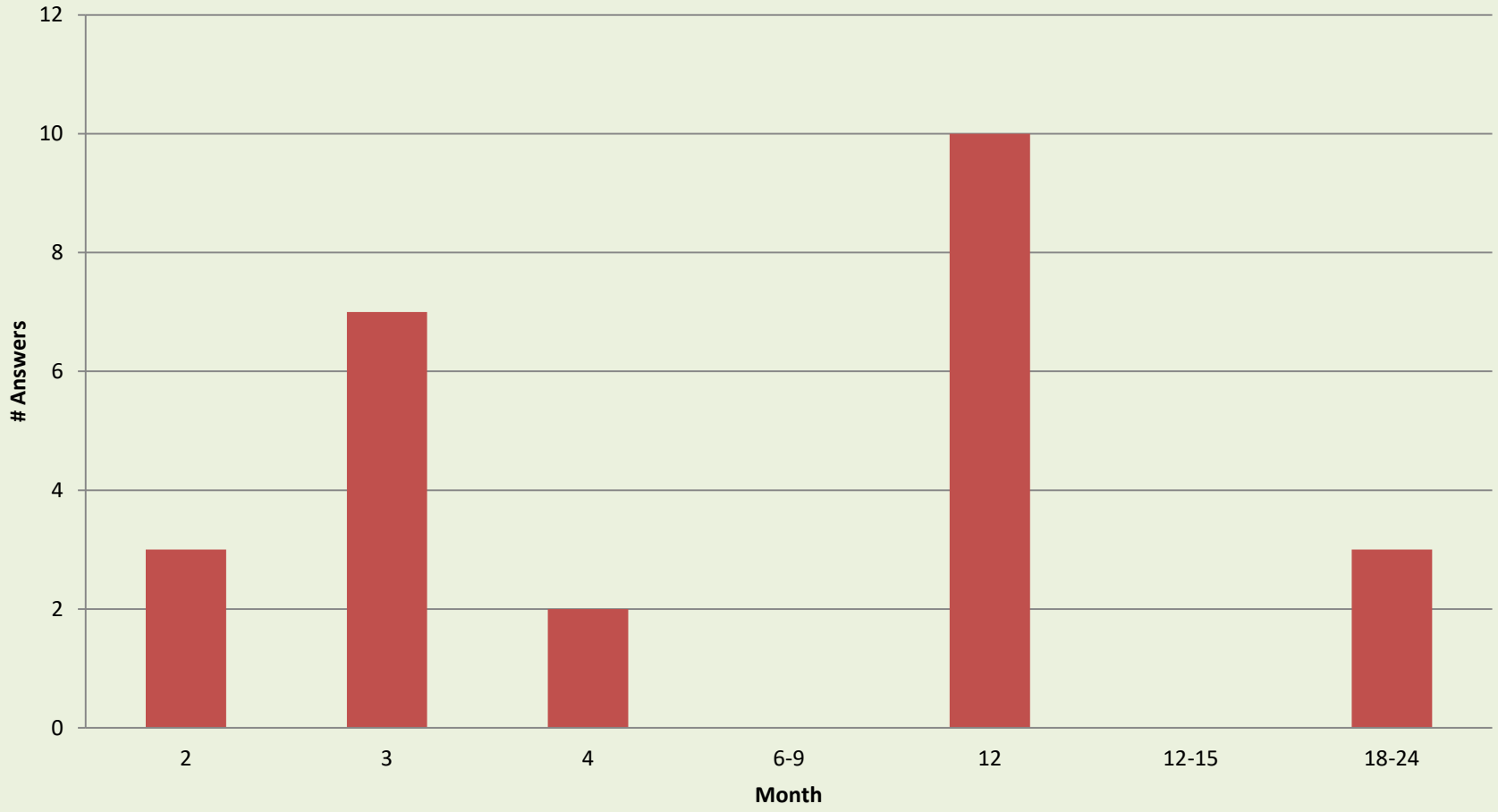
Answered: 25 Skipped: 4

90	9/27/2018 3:20 AM
90	9/24/2018 6:08 PM
365	9/24/2018 4:02 PM

Comments:

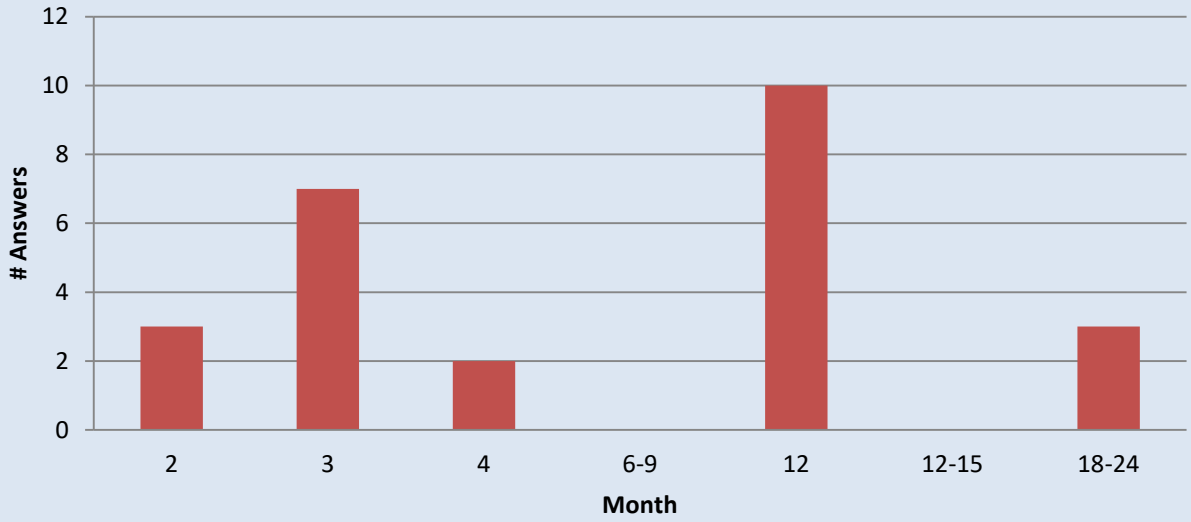
- ”At least 90 days”
- ”60-360 days”

Measuring duration

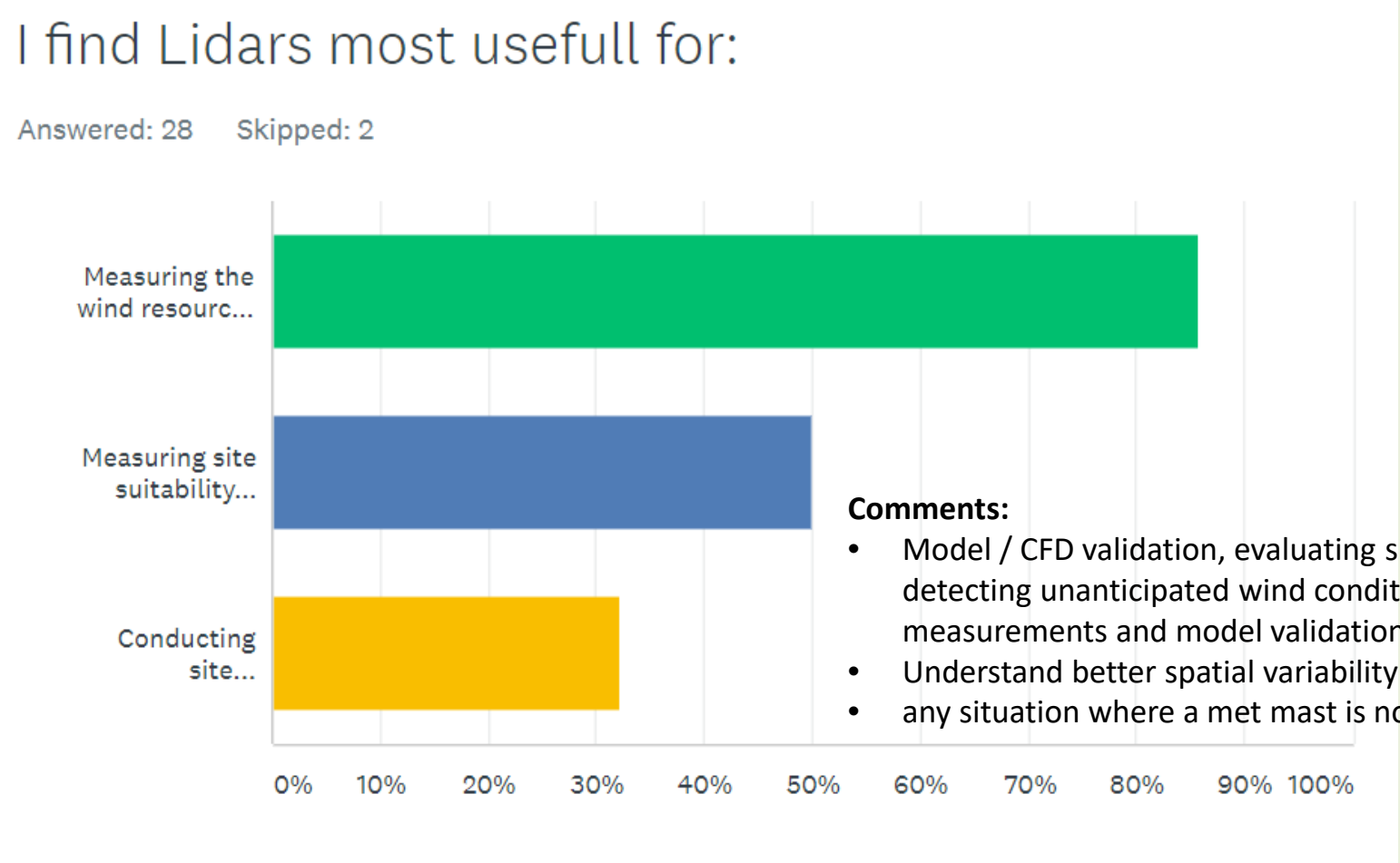


Measuring Duration: Summary

- 3 or 12-month campaings using 1-2 days for installation



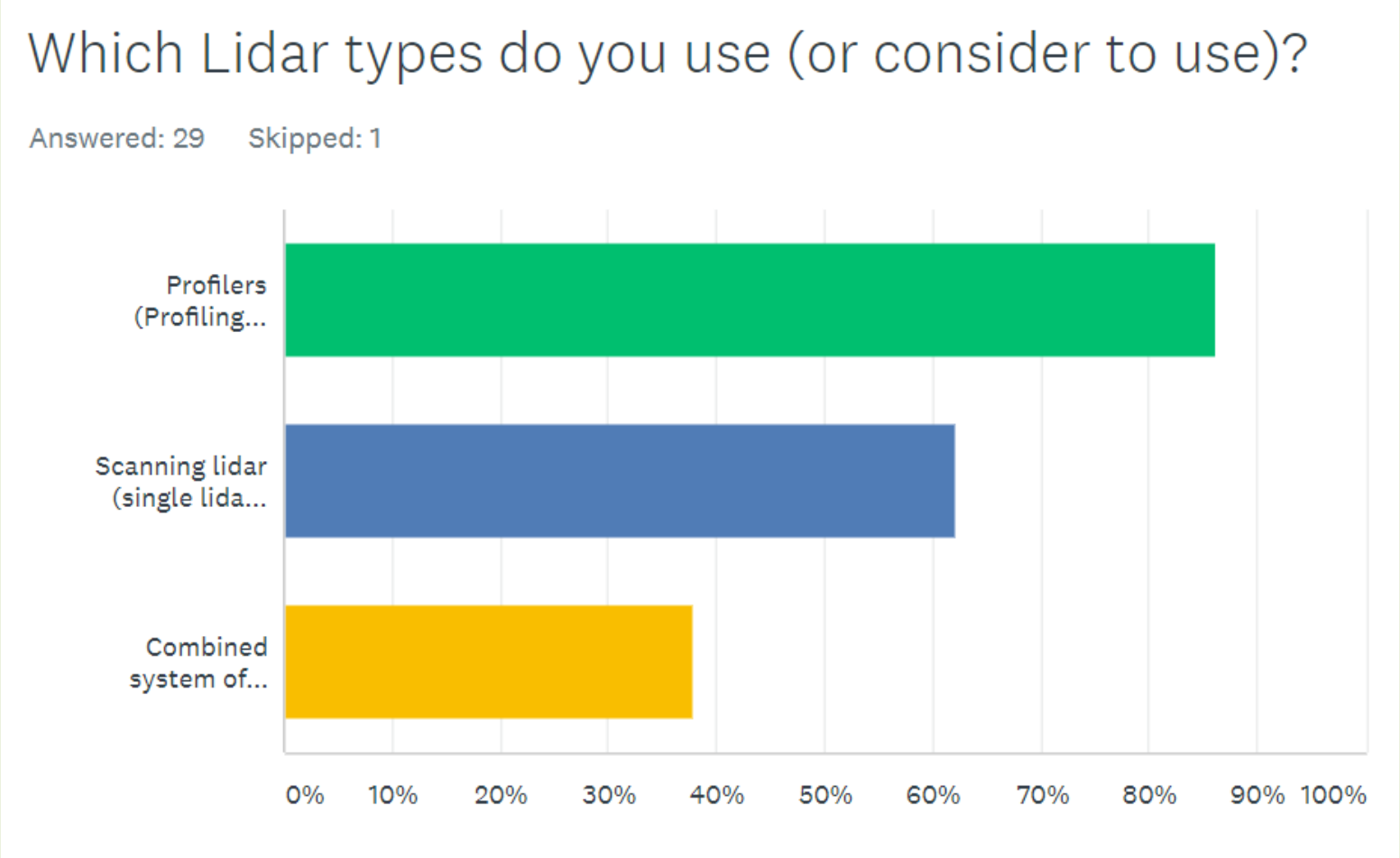
Q3: Lidars are usefull for …



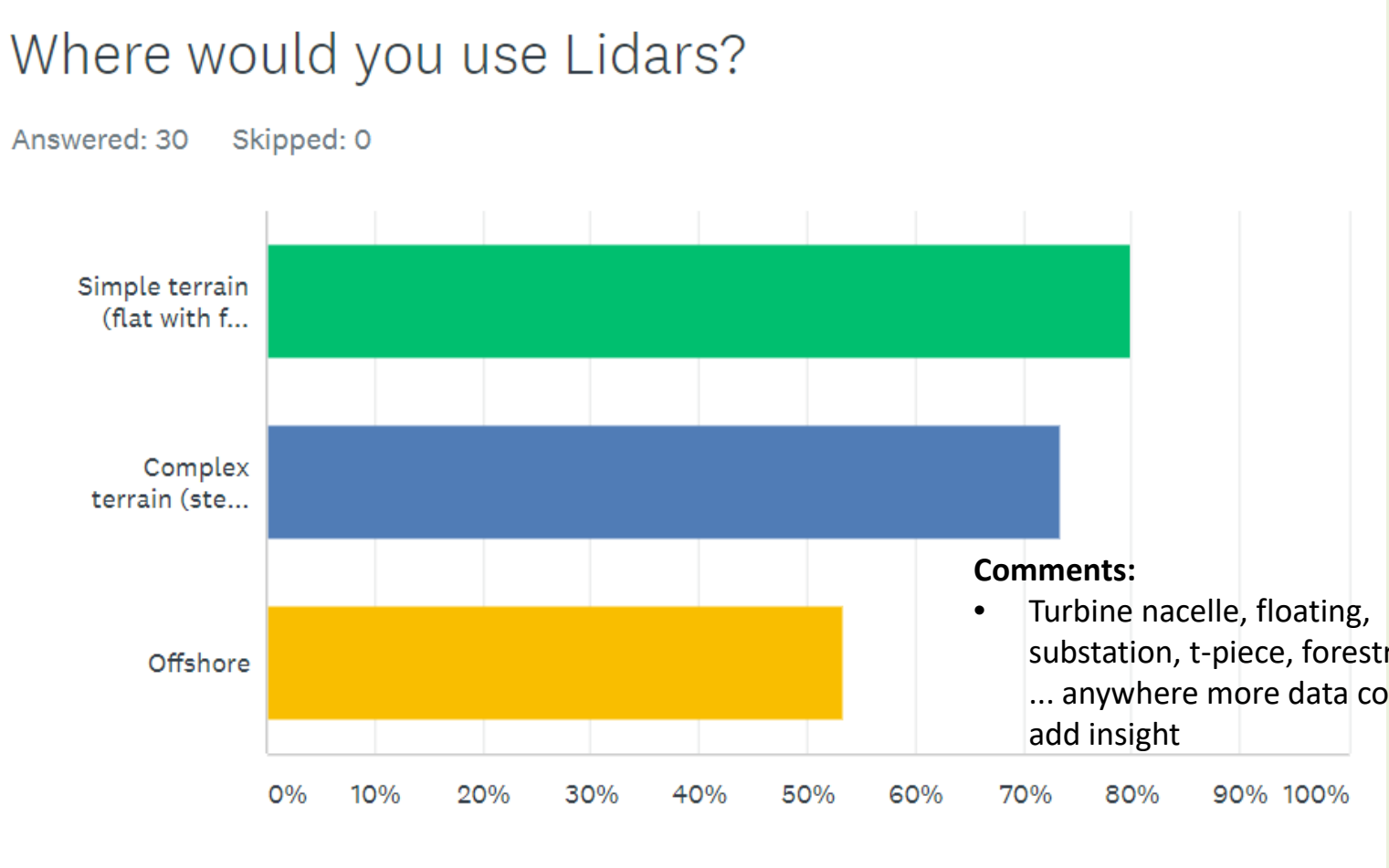
Comments:

- Model / CFD validation, evaluating site complexity and detecting unanticipated wind conditions, wake measurements and model validation
- Understand better spatial variability of the wind flow
- any situation where a met mast is not feasible

Q4: Lidar type



Q7: Where would you use them?



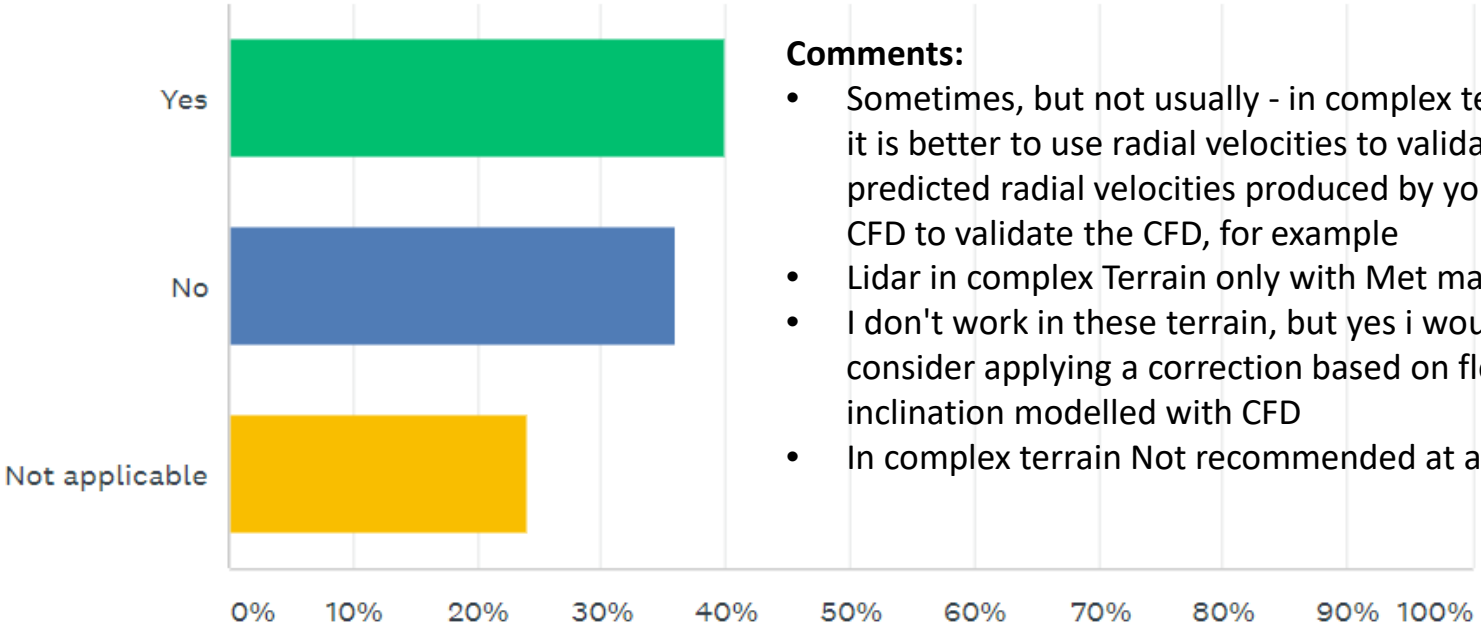
Comments:

- Turbine nacelle, floating, substation, t-piece, forestry ... anywhere more data could add insight

Q8: Corrections?

Do you usually apply any corrections when measuring in complex terrain?

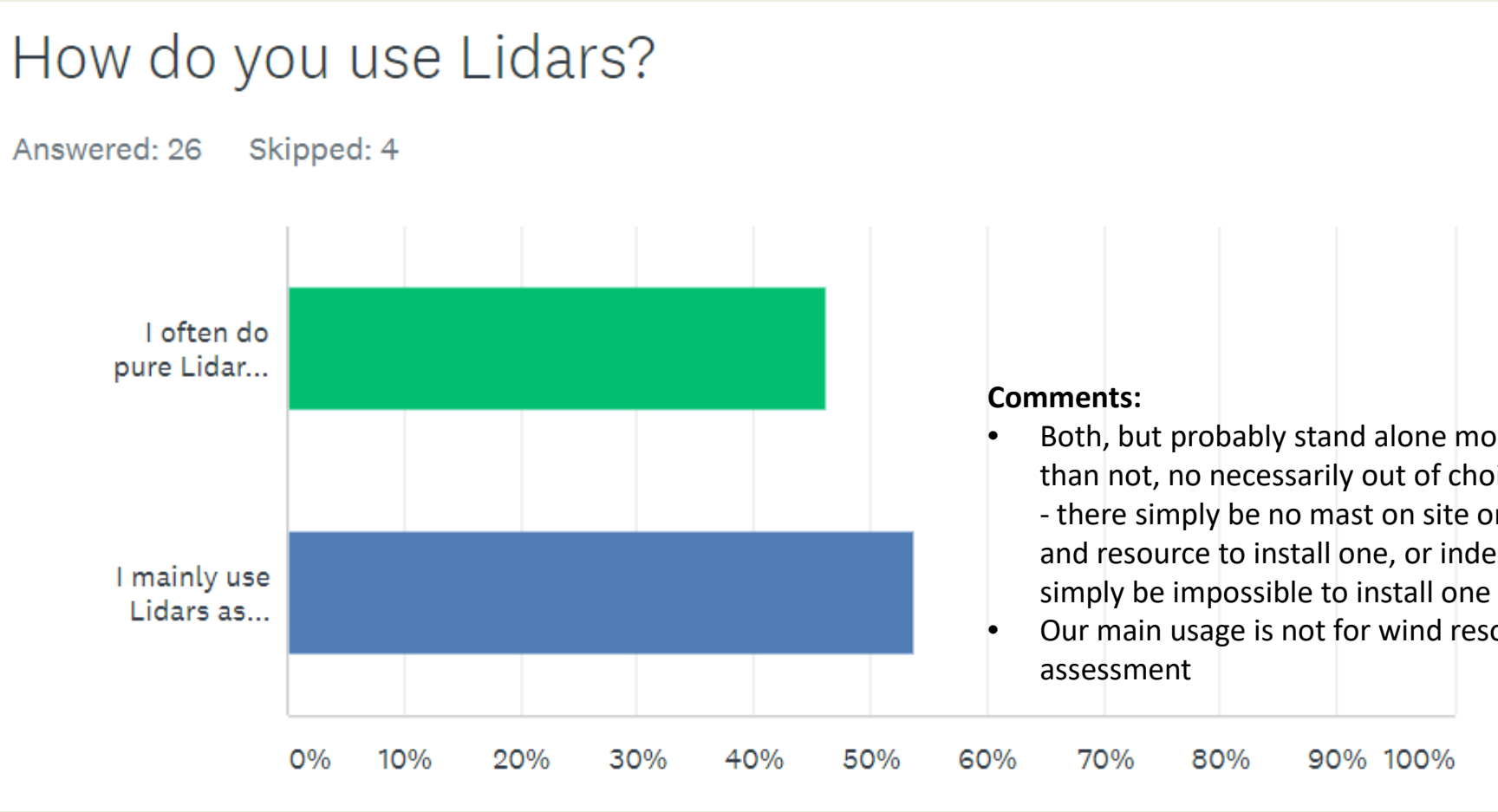
Answered: 25 Skipped: 5



Comments:

- Sometimes, but not usually - in complex terrain, it is better to use radial velocities to validate predicted radial velocities produced by your CFD to validate the CFD, for example
- Lidar in complex Terrain only with Met mast
- I don't work in these terrain, but yes i would consider applying a correction based on flow inclination modelled with CFD
- In complex terrain Not recommended at all

Q9



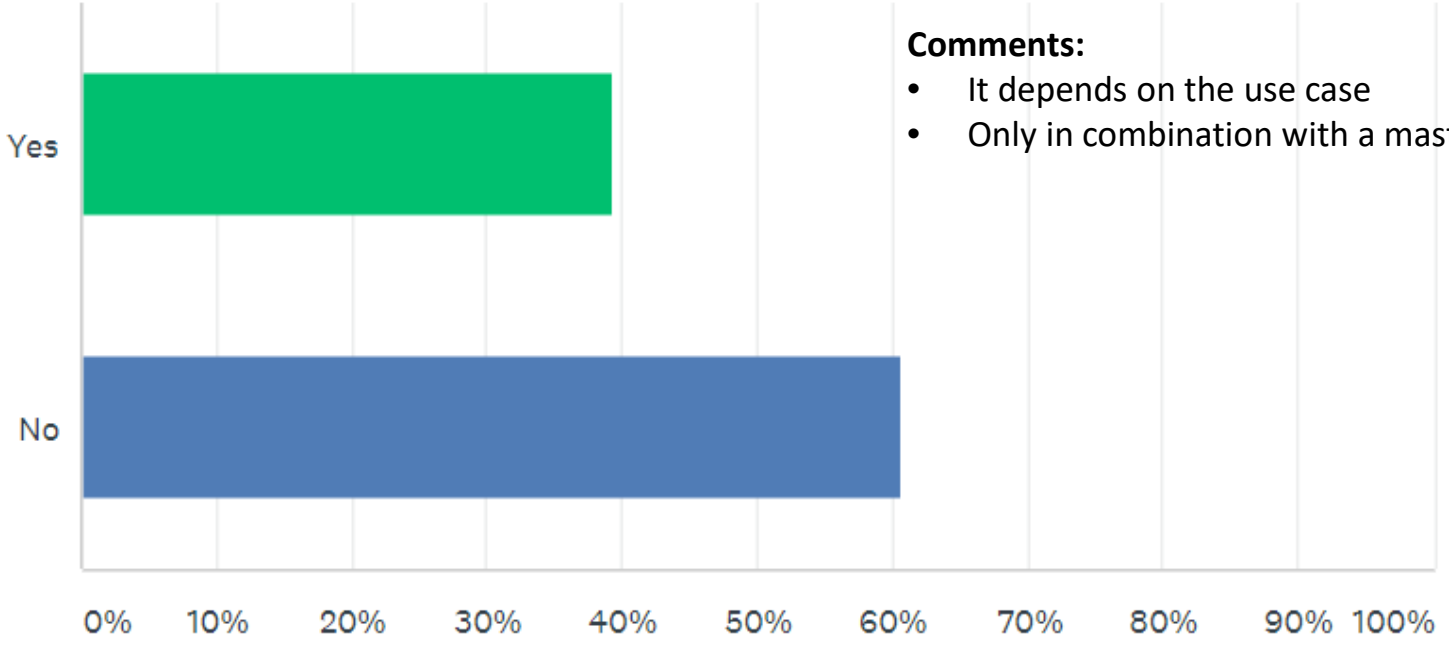
Comments:

- Both, but probably stand alone more often than not, no necessarily out of choice though - there simply be no mast on site or no time and resource to install one, or indeed it may simply be impossible to install one
- Our main usage is not for wind resource assessment

Q10

Do you move the Lidar during the campaign?

Answered: 28 Skipped: 2



Comments:

- It depends on the use case
- Only in combination with a mast.

Lidar Usage: Summary

The potential for lidars are great.

They are various use cases mainly used for:

- Ressource assessment (simple terrain, 12-month)
- Site inspection / validation (complex terrain, 3-month)

Barriers:

- How to use Lidars in complex terrain for ressource assessment?

Conclusions on the applicability of Lidars

Technology Barriers

- Price
- Data availability
- Complexity of use

continues improvement of Lidars and reduction of costs

Usage Barriers

- Lack of acceptance

familiarity with the full variety lidar methods – the metmast perspective

accepted method for ressource assessment in complex terrain using Lidars