

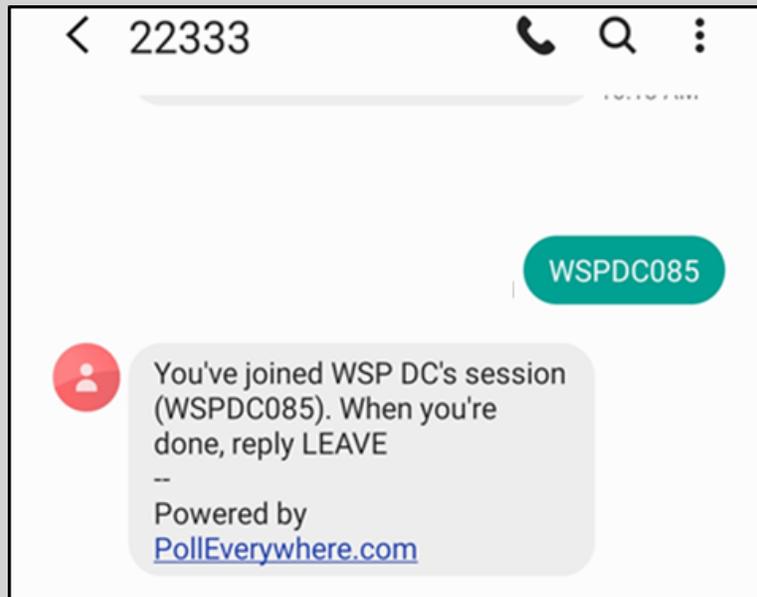
LOTS

ASSET RISK MANAGEMENT WORKSHOP

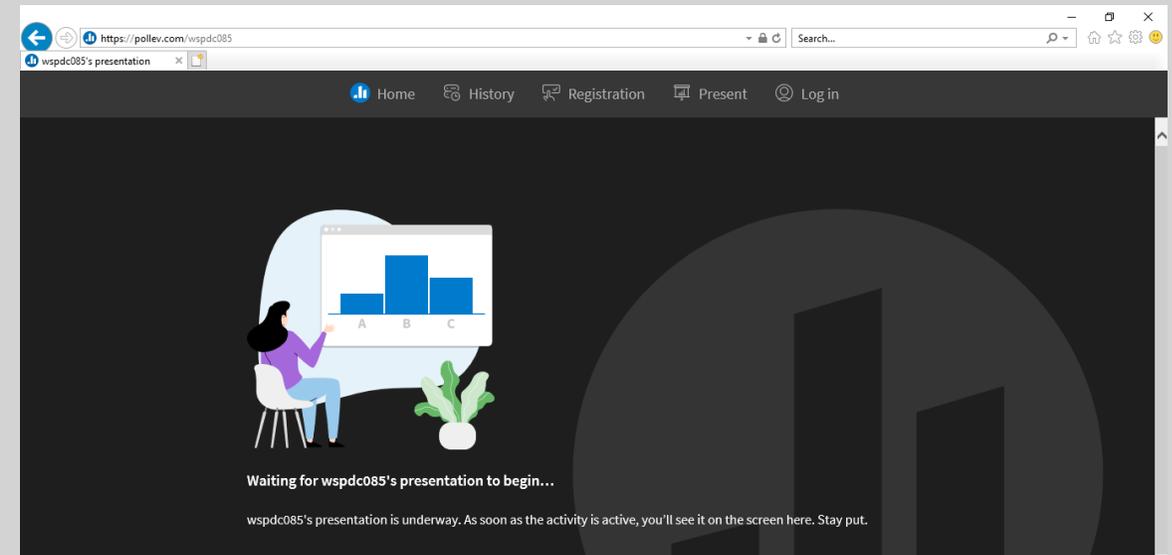
FEBRUARY 15, 2022

Poll Everywhere - *Be prepared to answer some poll questions*

OPTION 1: Text WSPDC085 to 22333



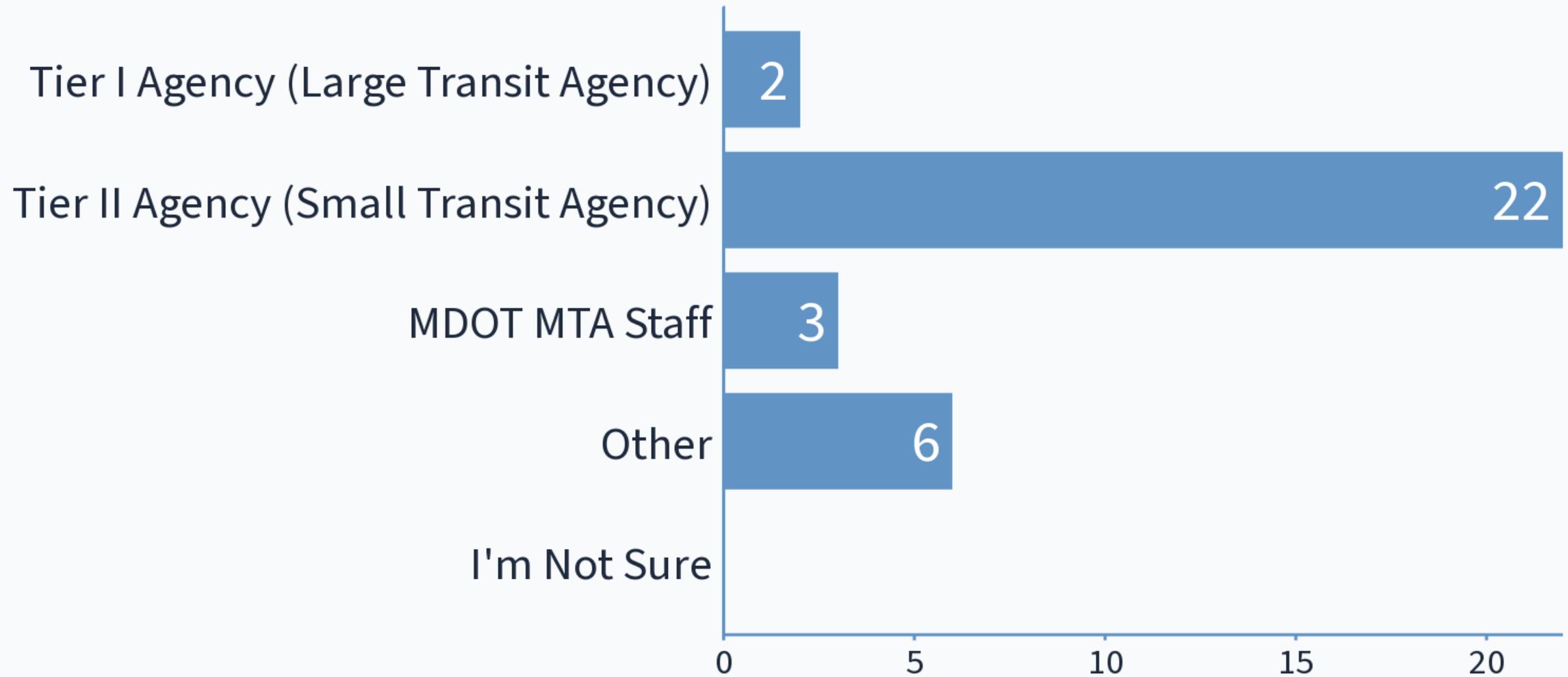
OPTION 2: Go to [PollEv.com/wspdc085](https://www.PollEv.com/wspdc085)



Use one word to describe how 2022 has been for you so far.



Who do we have in the "room"?



Total Results: 33

What agency do you represent?

“ BayRunner Shuttle ”

“ Cecil ”

“ Garrett ”

“ Dorchester and talbot ”

“ Montgomery ”

“ City of Annapolis ”

“ TAM ”

“ Ocean_City ”

“ Howard County ”

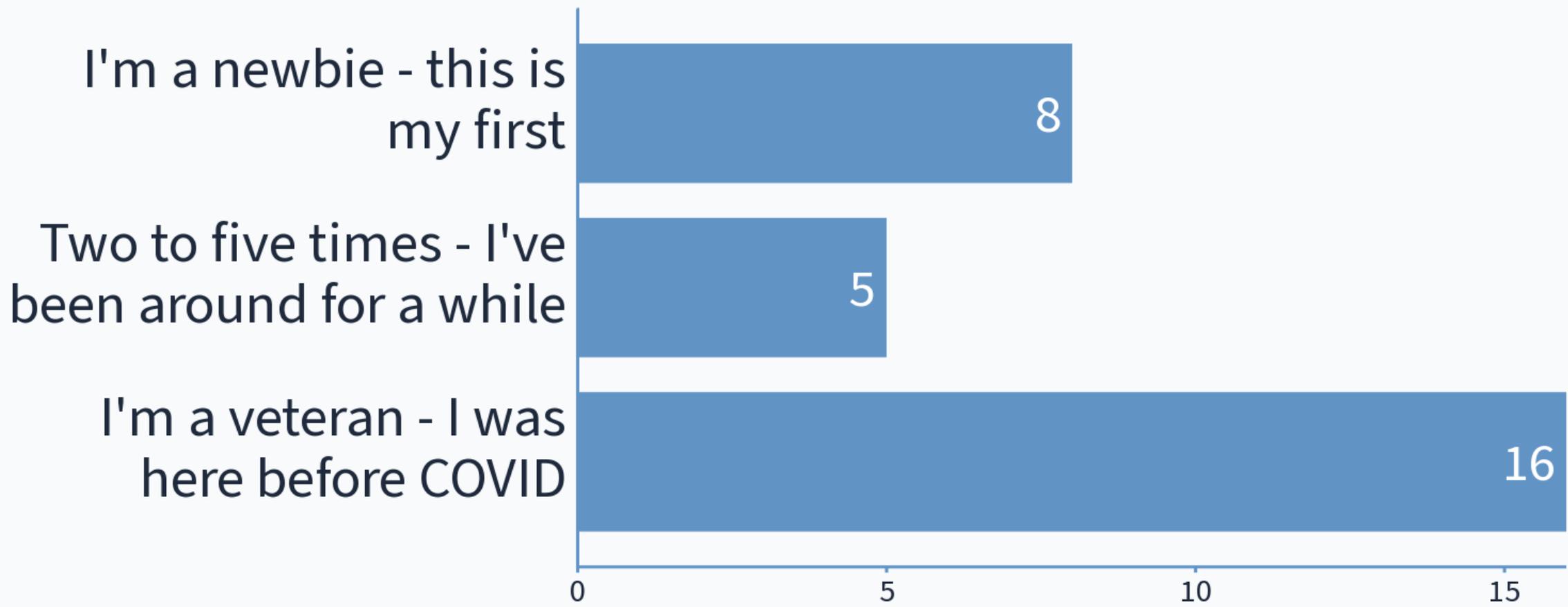
“ Carroll ”

“ Frederick ”

“ Baltimore county ”

“ Harford ”

How many times have you participated in an asset management workshop?



Workshop Objective

- Review the TAMP Risk Management Chapter
- Revisit the LOTS Risk Management Process
- Provide updates for the 2022 TAMP

Agenda

Welcome & Introductions

TAM 101, TAMP, and Federal Regulations Overview

Risk Management & the LOTS Group TAMP

Lunch Break

Part 1 Review

Updating Enterprise Risks

Updating Project Risks

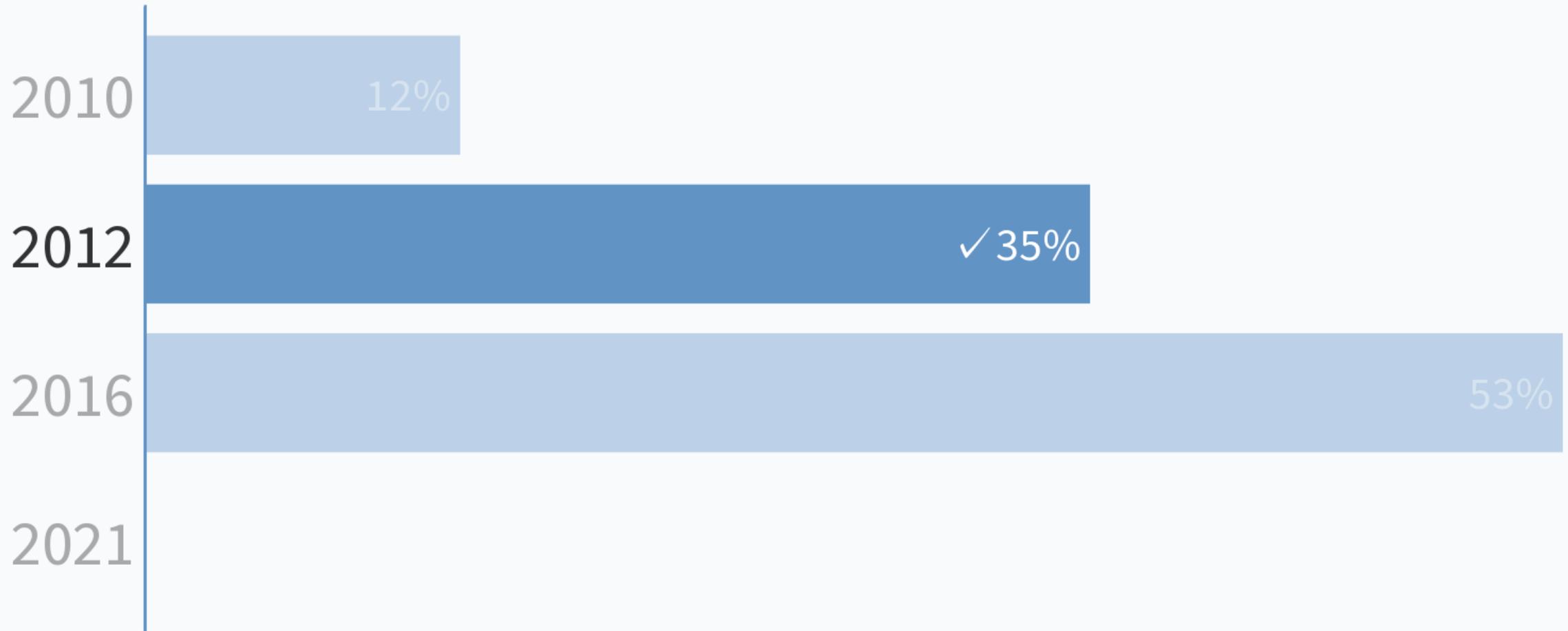
Wrap Up & Next Steps

TAM 101, TAMP, and Federal Regulations

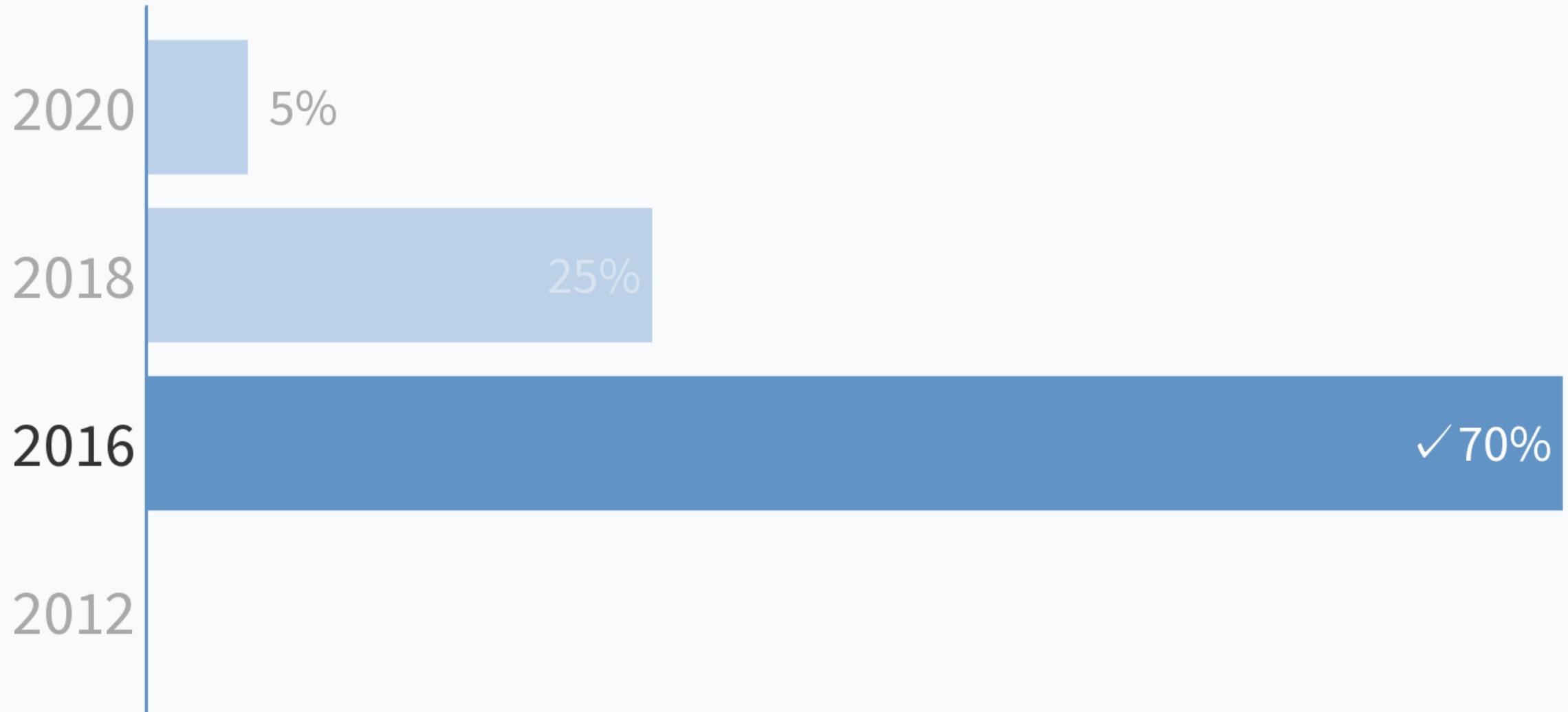
TAM 101, TAMP, and Federal Regulations

Get ready to compete!

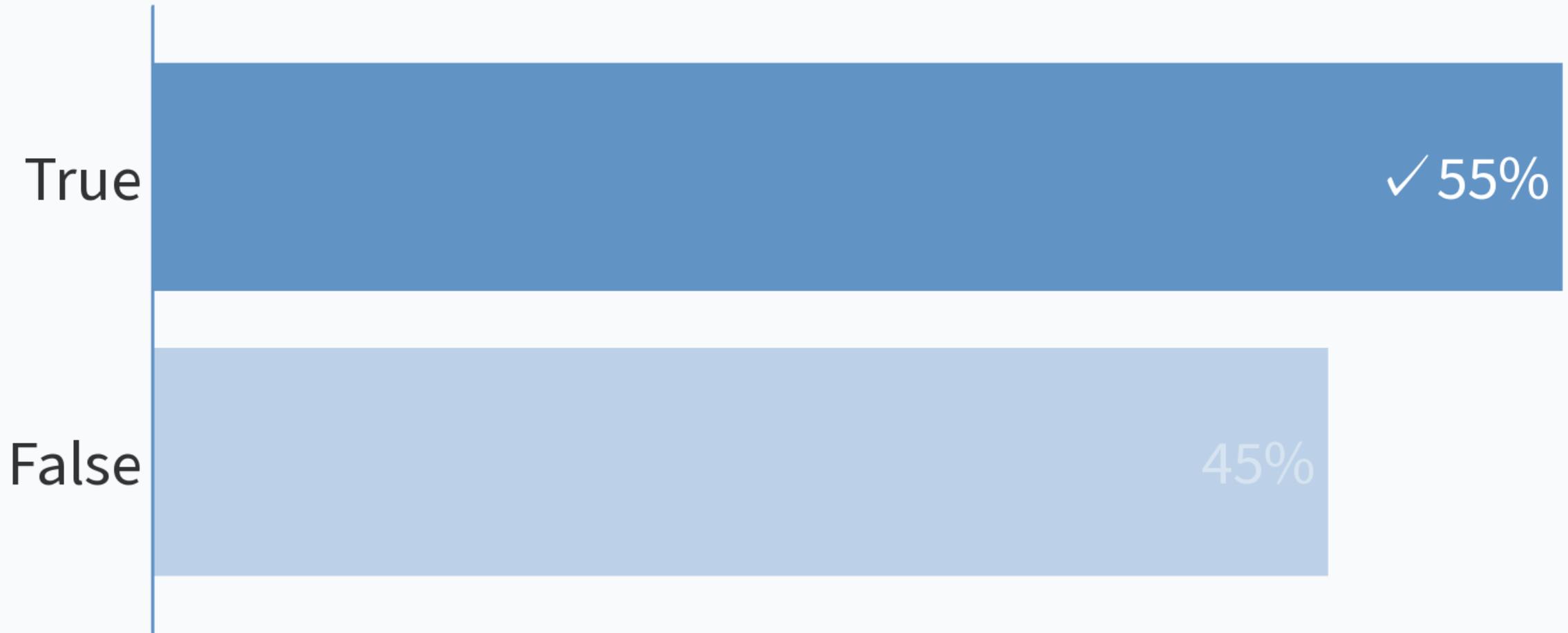
What year was asset management formally introduced into Federal legislation?



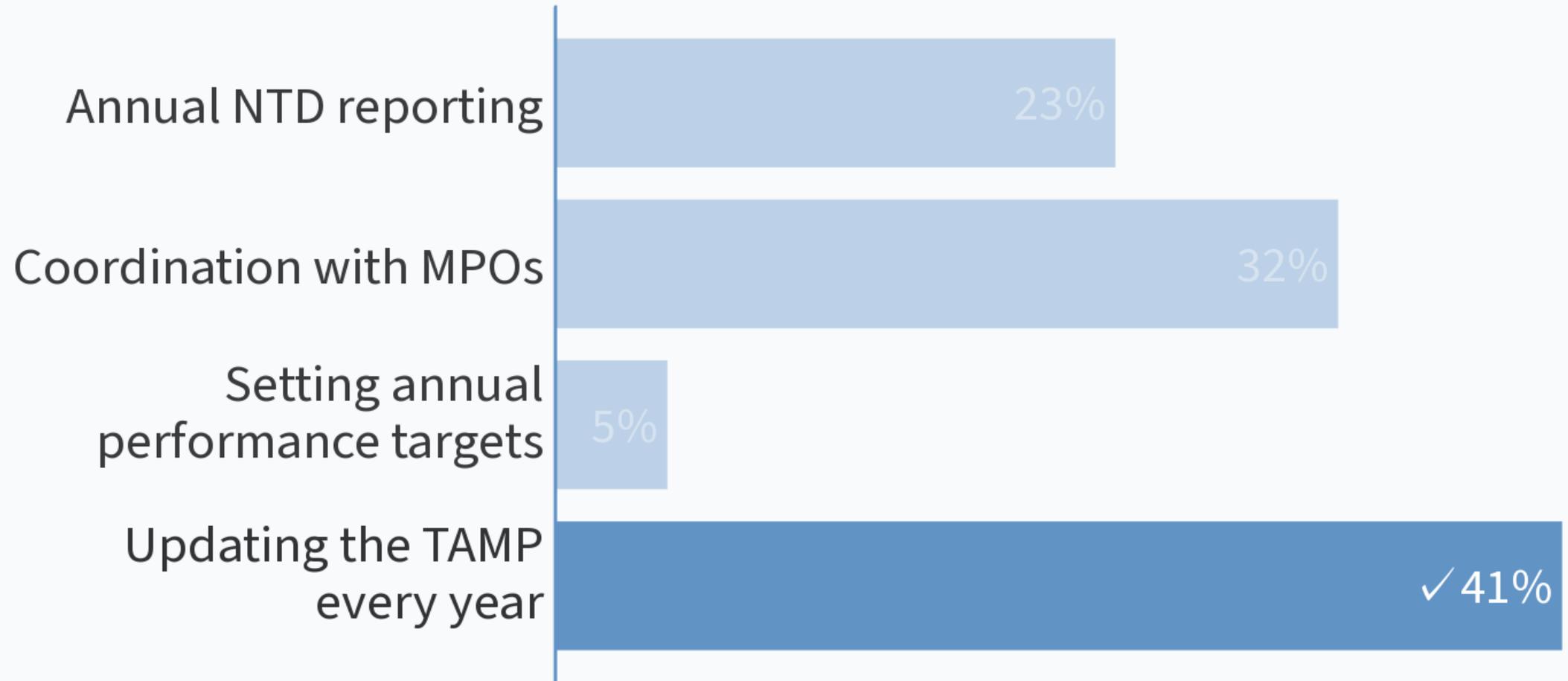
When did FTA publish the Asset Management Final Rule?



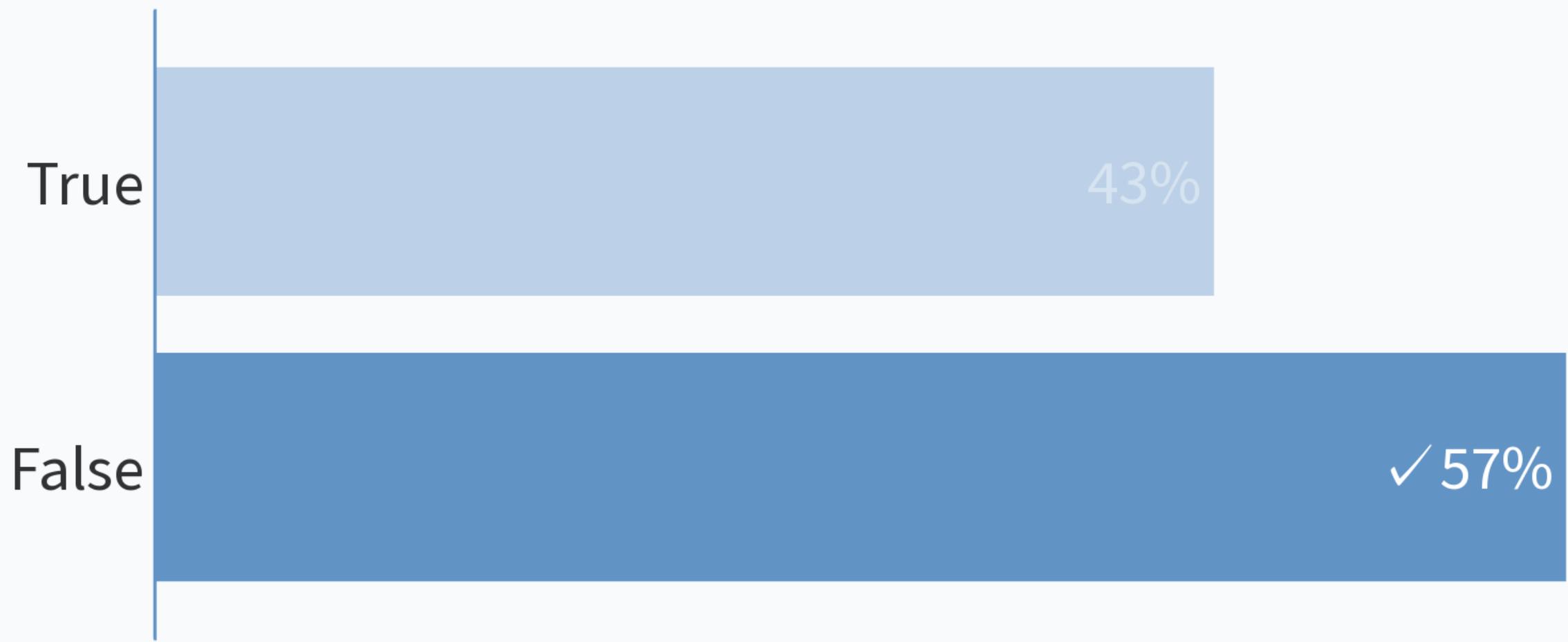
True or False: Tier II Transit agencies do not have to develop their own asset management plan



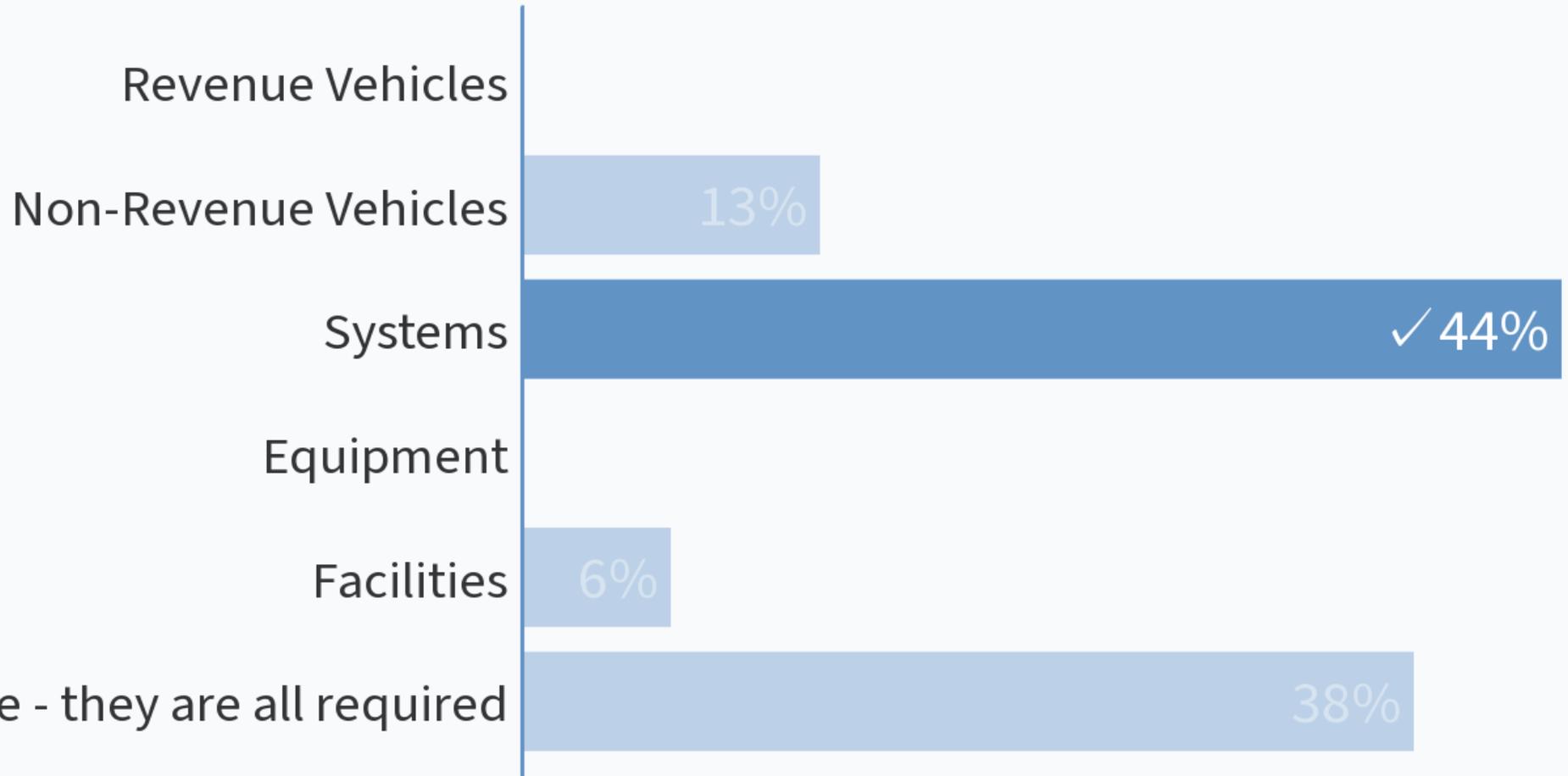
Which of the following is NOT an FTA asset management requirement?



True or False: MTA OLTS is the Accountable Executive for all Group TAMP participants.

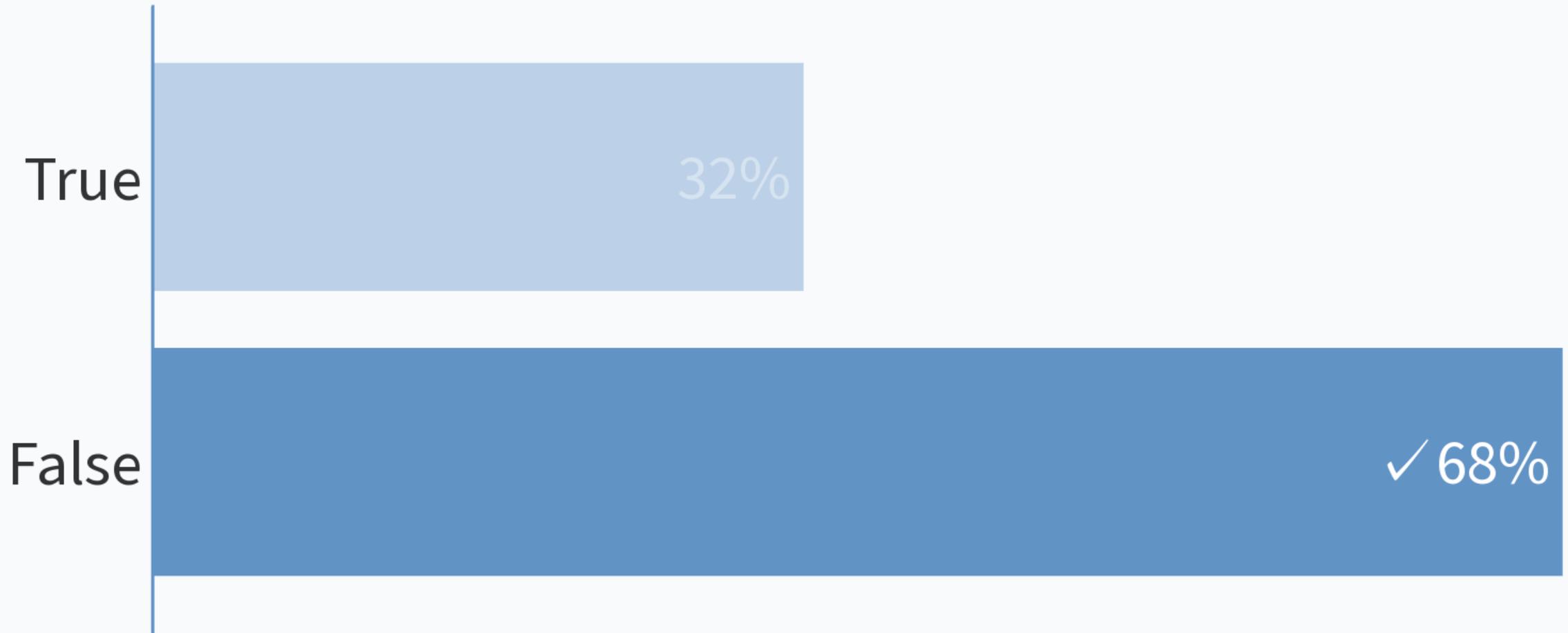


Which of the following asset categories is NOT required by FTA in the asset management plan?

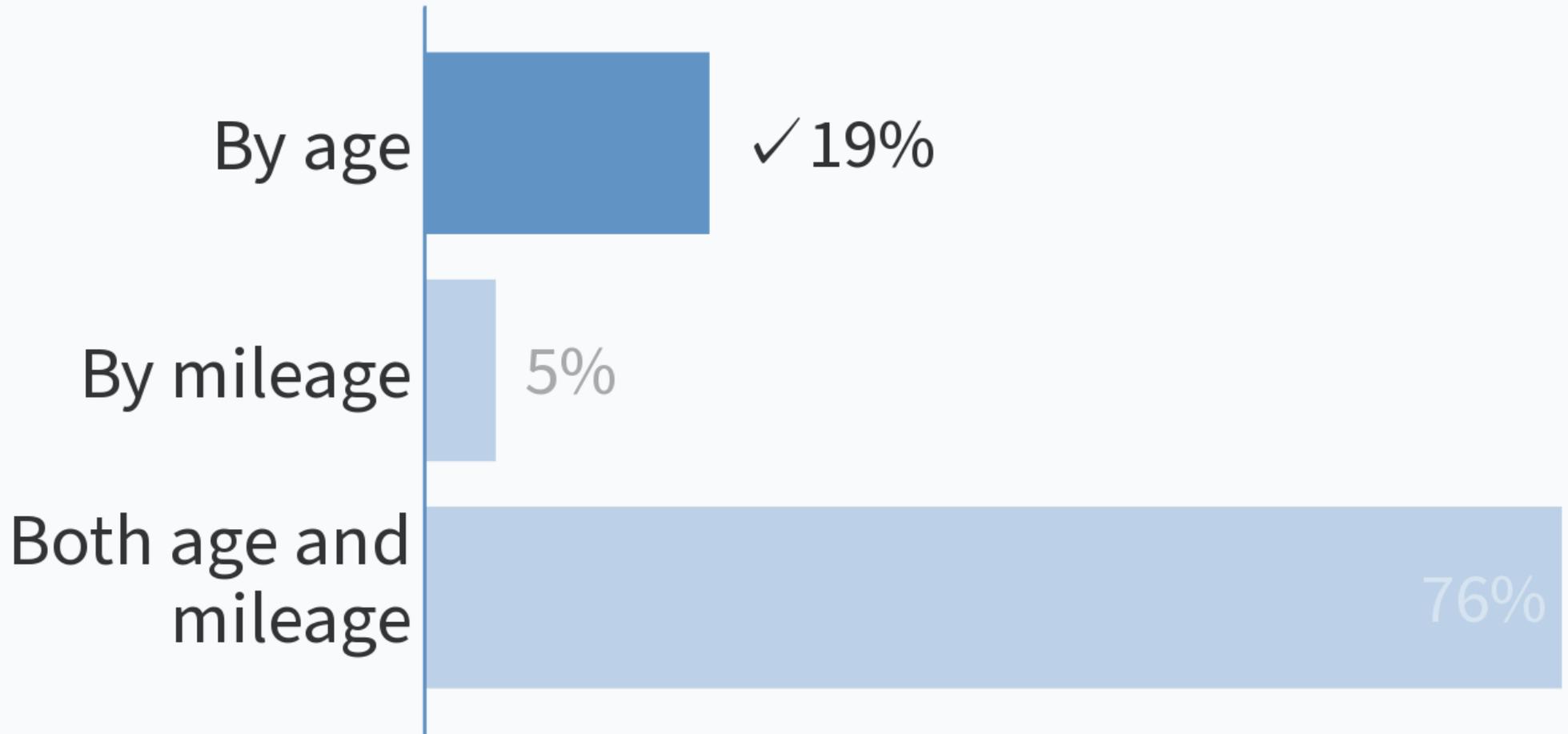


None of the above - they are all required

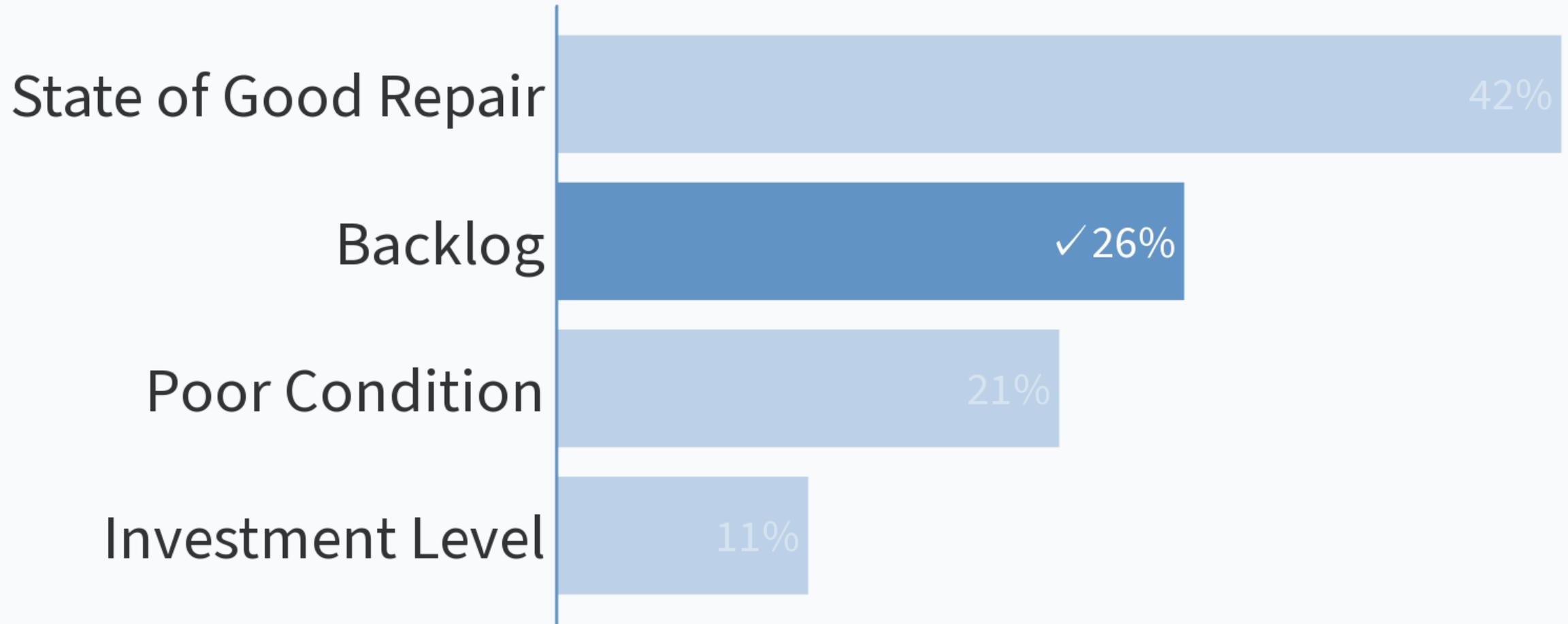
True or False: Useful Life Benchmark (ULB) is the same as the FTA's useful life for grant awards.



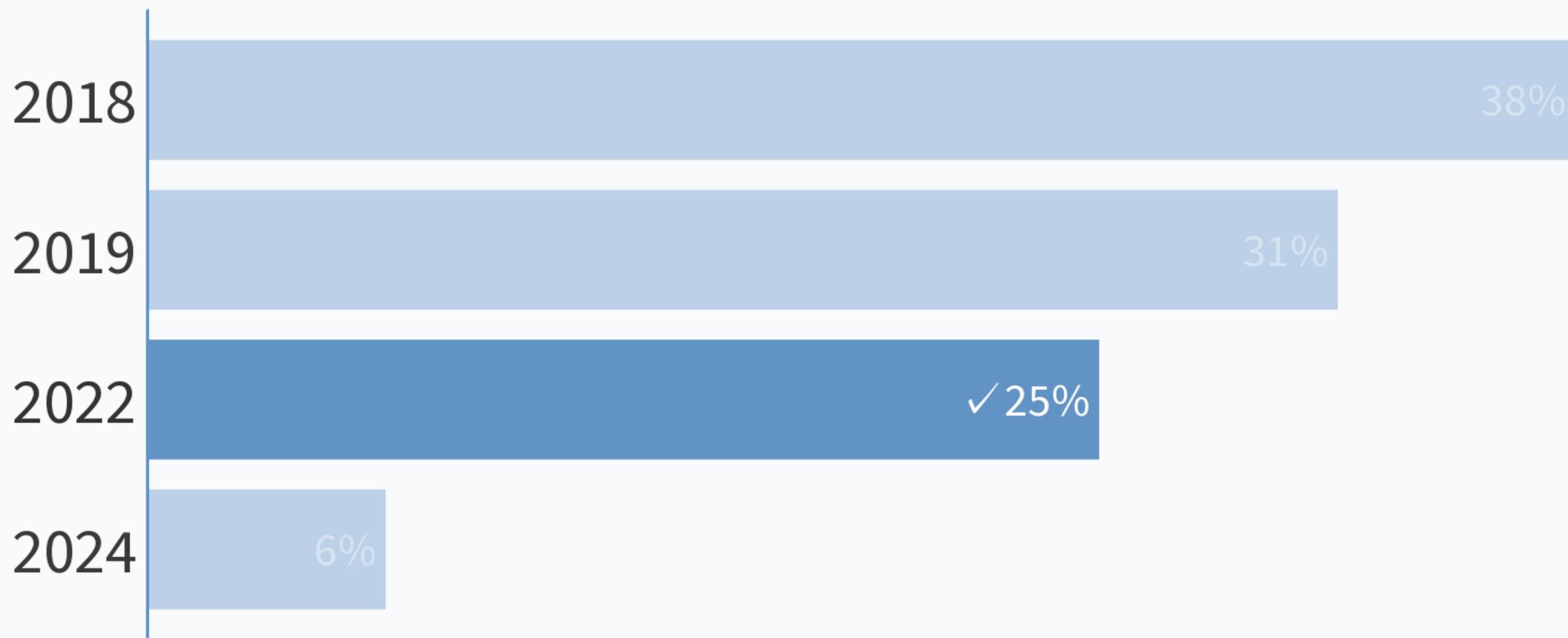
How do we measure the useful life benchmark (ULB) per FTA regulations?



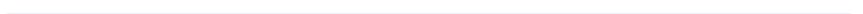
How do we refer to the total dollar value of assets that have aged beyond their ULB?



What year is/was the Maryland Tier II LOTS first major TAMP update?



Leaderboard

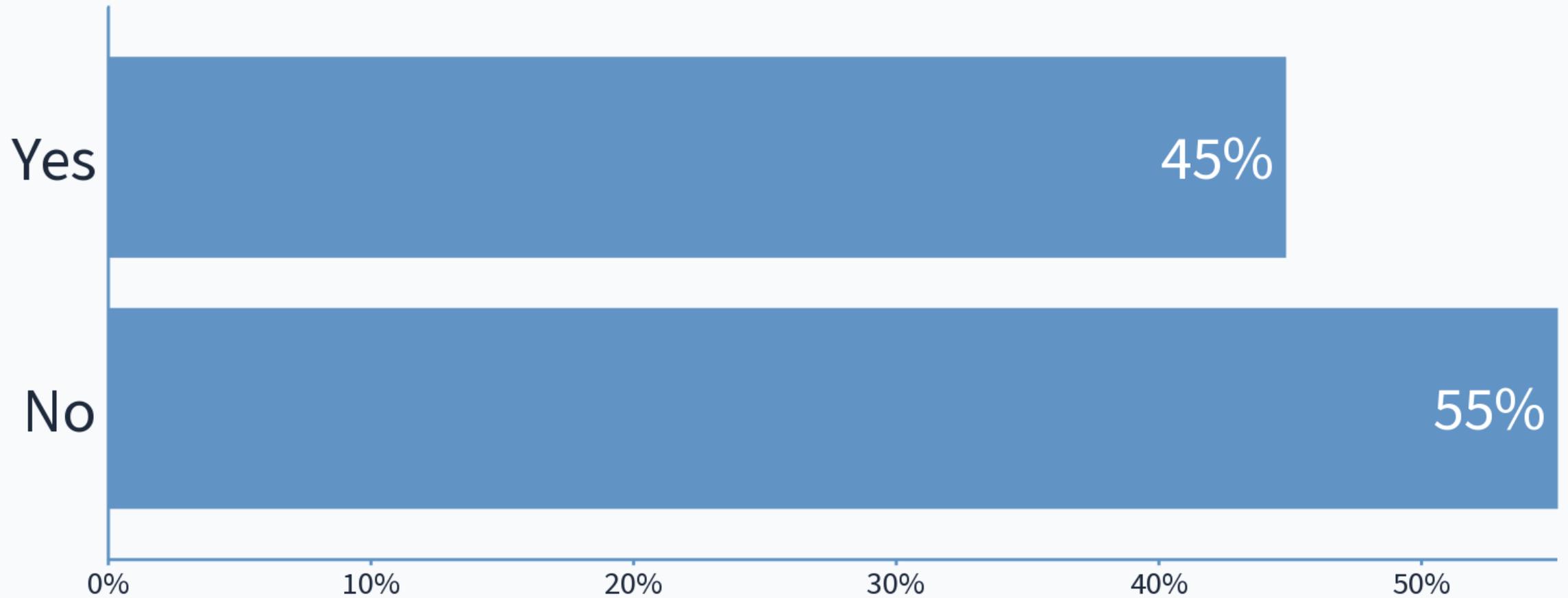
1		Guest5182		6938	Stacey Nash - Carroll
2		Guest2246		5907	Jeff Barnett - Charles
3		Guest9855		5906	Suzanne Kalmbacher - Cecil
4		Guest3769		5875	--
5		Guest3944		5844	John Duklewski - TAM
6		Guest4755		5000	Stephanie Overcash - Washington
6		Guest3081		5000	Bruce Hojnacki - MTA
6		Guest5598		5000	--
9		Guest4159		4563	--
10		Guest2089		4000	--

Risk Management Overview

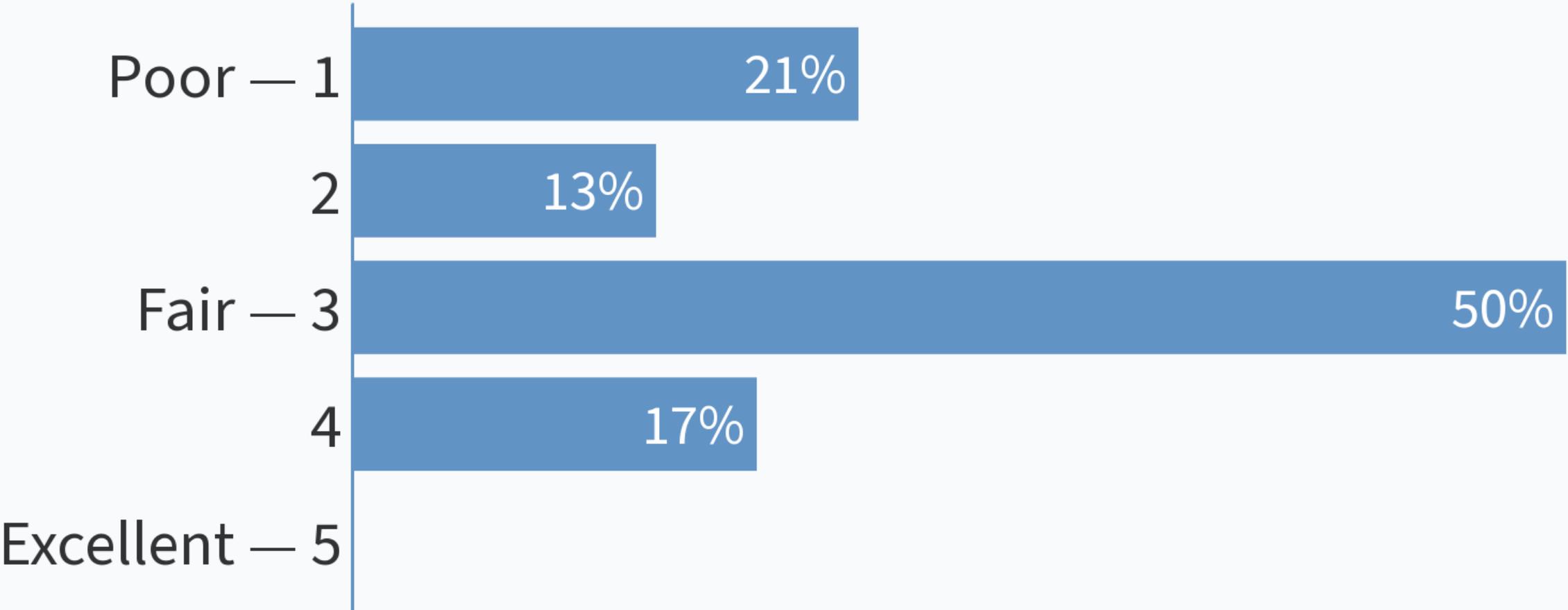
Risk Management in the LOTS

TAMP

Did you participate in the 2018 Risk Management workshop?



How would you rate your understanding of asset risk management?



Understanding Risk

RISK:

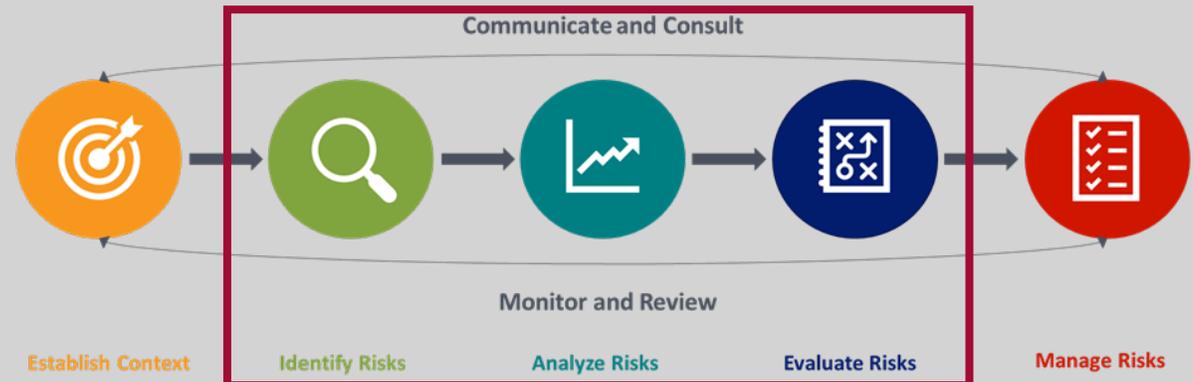
“The positive or negative effects of uncertainty or variability upon agency objectives” (23 CFR Part 515.5)

Expressed as a combination of potential event and impact

RISK MANAGEMENT (RM):

“the processes and framework for managing potential risks, including identifying, analyzing, evaluating, and addressing the risks to assets and system performance.” (23 CFR Part 515.5)

Five key steps in the risk management process:



The workshop is focused on these three steps.

“Managing risk is not new; formalizing it is.”

Risk Management Levels

The workshop discussion will focus on the enterprise/program and asset level risks:

Enterprise

Risks to the organization's overall strategic objectives or which involve multiple levels

Program

Risks to the overall asset management program that could hinder achieving AM goals

Asset/Project

Risks that are specific to individual assets, groups of assets, or relevant projects

Activity

Risks that are specific to ongoing functions that support programs or projects

Risk Categories

We will consider risks in five (5) key categories.

CATEGORY	DEFINITION
Asset Information & Technology	Risks associated with assets and their condition, asset data, and related technology. Examples include aging infrastructure, deferred maintenance impacts, asset data quality, etc.
Financial/ Economic	Risks affecting the financial stability of asset investments or the asset management program. Examples include lack of funding, economic disruptions, etc.
External/Legal	Risks related to external factors that are not easily controlled or failure to comply with standards, policies, etc. and the impact of changes in legal requirements.
Human Resources	Risks related to changing resource needs or internal stakeholder expectations.
Operational	Risks directly related to the ability to provide transit service operation

Identifying Risks

Remember that risk statements are structured as:

Potential event + Impact

E.g. if replacement funding is not provided (*potential event*),
asset condition will fall below the minimum target (*impact*)

Prioritizing Risks – The Risk Score

The risk score is a combination of the probability of a risk occurring (likelihood) and the severity of the impact (consequence)

$$\text{Risk Score (RS)} = \text{Likelihood (L)} \times \text{Consequence (C)}$$

Defining Likelihood/Probability

PROBABILITY LEVEL	SPECIFIC INDIVIDUAL ITEM	FLEET OR INVENTORY	FREQUENCY
Frequent A	Likely to occur frequently in the life of a system	Continuously experienced	> 1 event / 2 weeks
Probable B	Will occur often in the life of a system	Will occur frequently in the system	> 1 event / month; < 24 events / year
Occasional C	Likely to occur sometime in the life of an item	Will occur several times	>1 event / year; < 5 during 5 years
Remote D	Unlikely, but possible to occur in the life of an item	Unlikely, but can be expected to occur	> 1 event / 5 years; < 10 during 10 years
Improbable E	So unlikely, it can be assumed occurrence may not be expected	Unlikely to occur, but possible	< 1 event during 20 years

Probability is derived from an agency's safety data, historical data from similar systems, & from expert opinion.

Probability can be assessed qualitatively or quantitatively

Defining Consequence

SEVERITY	CHARACTERISTICS						
	Injury	Property Damage	Financial/Economic	System Performance	Legal & Compliance	Reputational	Workforce
Catastrophic 1	Several deaths and/or numerous severe injuries	Estimated loss from the incident in excess of \$500,000	Lack of financial resources to maintain assets to a minimum acceptable level of service. Potential risk of penalties or loss of funds.	Total loss of equipment or system interruption, requiring months to repair	Will result in significant litigation activities and fines; may involve class actions; will result in severe breach (non-compliance) with legislation/regulation	Ongoing media coverage, irreparable reputational damage, government intervention (weeks - months)	Agency's resources not available and a consultant/special service required at a prohibitive increase in time or money. Critical loss of staff that cannot be replaced.
Critical 2	Low number of deaths and/or severely injured	Estimated loss from the incident in the range of \$100,000 to \$499,999 million	Largely inadequate financial resources to maintain assets to a minimum acceptable level of service	Significant loss of equipment or system interruption, requiring weeks to repair	May result in litigation, requiring significant dedicated time by legal counsel to address liability and consequences; may result in a major breach (non-compliance) with legislation/regulation	Prolonged media campaign, serious reputational damage, sustained government involvement (days - weeks)	Agency's resource not available and a consultant/special service required at a considerable increase in time or money. Loss of staff that requires significant time to replace.
Moderate 3	Minor injury and possible serious injury	Estimated loss in the range of \$10,000 to \$99,999	Somewhat inadequate financial resources to maintain assets to a minimum acceptable level of service	Some loss of equipment or system interruption, requiring seven or less days to repair	Would result in a serious issue requiring investigation and advice into legal liability; may require external counsel advice; will result in non-compliance with legislation/regulation	Adverse media coverage, reputational damage, government involvement	Overtime needed for more than 3 months or qualified staff not available requiring a consultant/special service at an increase in cost.
Minor 4	Possible minor injury	Estimated losses are relatively minor, in the range of \$1,000 to \$9,999	Mostly adequate resources to deliver assets to a minimum acceptable level of service	Some loss of equipment, no system interruption, less than 24 hours to repair	Will result in more complex legal issues but these are able to be managed by in-house legal staff; may result in minor non-compliance with legislation/regulation	Local media coverage and some reputational damage	Overtime needed for more than 3 months or a consultant/special service required.
Insignificant 5	No injury	Estimated loss from the incident is likely less than \$1,000	Resources sufficient to meet asset state of good repair	Minor damage to equipment no system interruption, no immediate repair necessary	Issues arise but are able to be managed by routine procedures; will not affect compliance with legislation/regulation	No adverse media coverage or reputational damage	Overtime needed for less than 3 months.

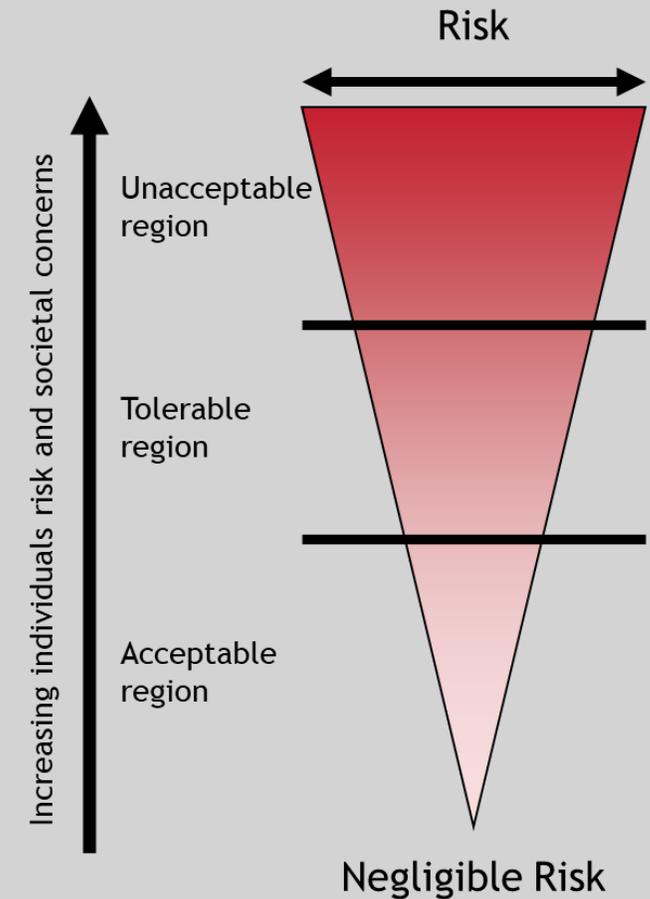
Generating the Risk Score

RISK INDICES					
Probability	Severity Category				
	1 Catastrophic	2 Critical	3 Moderate	4 Minor	5 Insignificant
(A) Frequent	1A	2A	3A	4A	5A
(B) Probable	1B	2B	3B	4B	5B
(C) Occasional	1C	2C	3C	4C	5C
(D) Remote	1D	2D	3D	4D	5D
(E) Improbable	1E	2E	3E	4E	5E

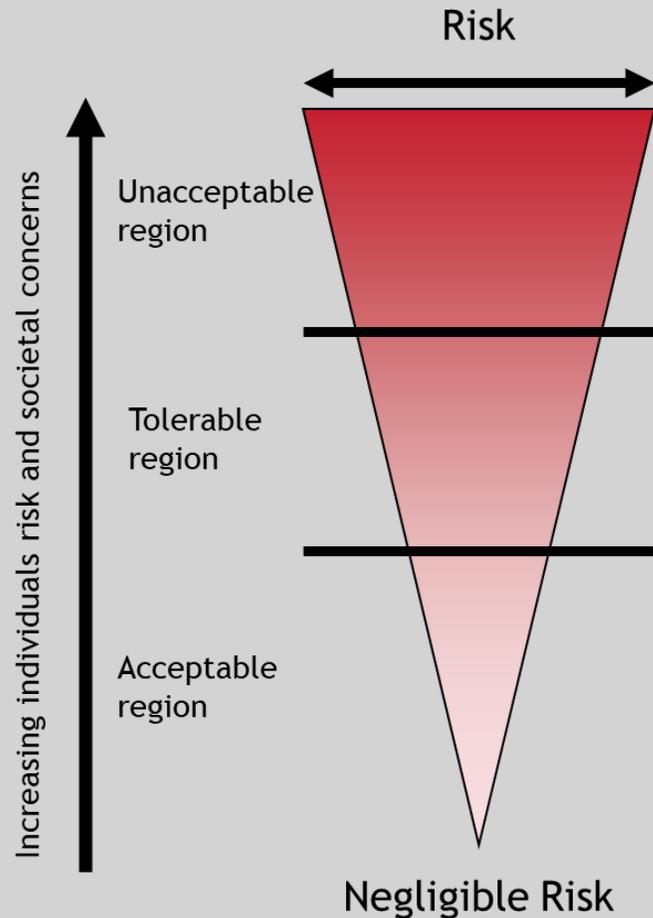
Risk Appetite

Three Risk Regions:

1	UNACCEPTABLE	Risks too high & must be reduced
2	ACCEPTABLE	Risks are low & okay as-is
3	TOLERABLE	Risks may be in the middle region if:
		<ul style="list-style-type: none"> ▶ The risk is below the pre-determined unacceptable limit; ▶ The risk has been reduced to a level that is as low as reasonably practicable; and ▶ The benefits of the proposed system are sufficient to justify accepting the risk.



Acceptable and Unacceptable Risk



RISK INDICES					
Frequency of Occurrence	Severity Category				
	1 Catastrophic	2 Critical	3 Moderate	4 Minor	5 Insignificant
(A) Frequent	1A	2A	3A	4A	5A
(B) Probable	1B	2B	3B	4B	5B
(C) Occasional	1C	2C	3C	4C	5C
(D) Remote	1D	2D	3D	4D	5D
(E) Improbable	1E	2E	3E	4E	5E

Risk Tolerance & Treatment

RISK INDICES					
Probability	Severity Category				
	1 Catastrophic	2 Critical	3 Moderate	4 Minor	5 Insignificant
(A) Frequent	1A	2A	3A	4A	5A
(B) Probable	1B	2B	3B	4B	5B
(C) Occasional	1C	2C	3C	4C	5C
(D) Remote	1D	2D	3D	4D	5D
(E) Improbable	1E	2E	3E	4E	5E

Each category requires a specific level of action, defined in the legend

LEGEND

-  **Unacceptable** - Cannot be accepted as is, must be mitigated
-  **Undesirable** - Should be mitigated, or can be accepted with Executive Management concurrence
-  **Acceptable** - with Technical Review (must identify who signs off)
-  **Acceptable without further review**

Risk Response

TOLERATE	Monitor without Action
TREAT	Take Action to Mitigate Risk
TRANSFER	Transfer Risk Responsibility to Another Party
TERMINATE	Avoid the Risk by Eliminating the Source
TAKE ADVANTAGE	Monitor Risks where the Potential Upside Exceeds the Negative Consequences

Risk Response Options

- LOTS risk treatment options
 - **Mitigation** - corrective actions that eliminate or reduce risk
 - **Acceptance** - no mitigation; continuous monitoring

2018 TAMP Risks

Enterprise/Program Risks

RISK CATEGORIES



IT



Economic



External



Financial



HR



Operational

Category	Risk
Asset Information and Technology	Implementation of new transportation technologies LOTS struggle to prepare for/adapt to the influx of new transportation technologies (fare collection, apps, etc.), which impacts service reliability and performance and the management of related new assets.
Economic	Changing demographic of riders and the developing population (medical services) A growing senior population results in increased demand for ADA service. This demand increase may require additional inventory needs (more ADA compliant vehicles) or additional service needs (more frequent service to medical facilities and other services heavily utilized by seniors).
External	Unexpected demand on existing transit system Economic development (such as the opening of a new job center), political influences, and other unexpected factors may prevent LOTS from delivering the appropriate level of service for customer demand. Federal legislation uncertainty In the current political climate, there is little certainty as to whether transit funding is a federal priority. Federal legislation threatens overall federal transit funding.
Financial	Insufficient county-level funds to match federal and state funding Many federal funding programs are contingent on the local jurisdictions' ability to provide a local match. Some LOTS have difficulty coming up with the local match, which puts the LOTS in jeopardy of losing federal funding. Difficulties maintaining operational budget efficiency Rising operational costs such as fuel and overtime costs, may lead to reduced financial stability. Fare evasion When passengers utilize LOTS services without paying the fare, revenue available to properly maintain service is reduced.
Human Resources	Resource capability and competence Lack of qualified personnel to support new mandates, a shortage of commercial drivers, and an undisciplined workforce impact operating and asset performance. Department of Health Services (DHS) Contract Loss of the DHS contract would cause loss of staff, which may reduce service capacity. Leadership Turnover During leadership transitions (e.g. due to political appointments), lack of succession planning and leadership development result in loss of institutional knowledge and other complications related to efficient operations.
Operational	Insufficient funding and procurement mechanisms Insufficient funding and procurement mechanisms to maintain rolling stock and associated equipment in a SGR, threaten asset performance and service reliability.

Project Risks

PROJECT LEVEL RISKS

 = 5 Risks



7 Unacceptable



11 Undesirable

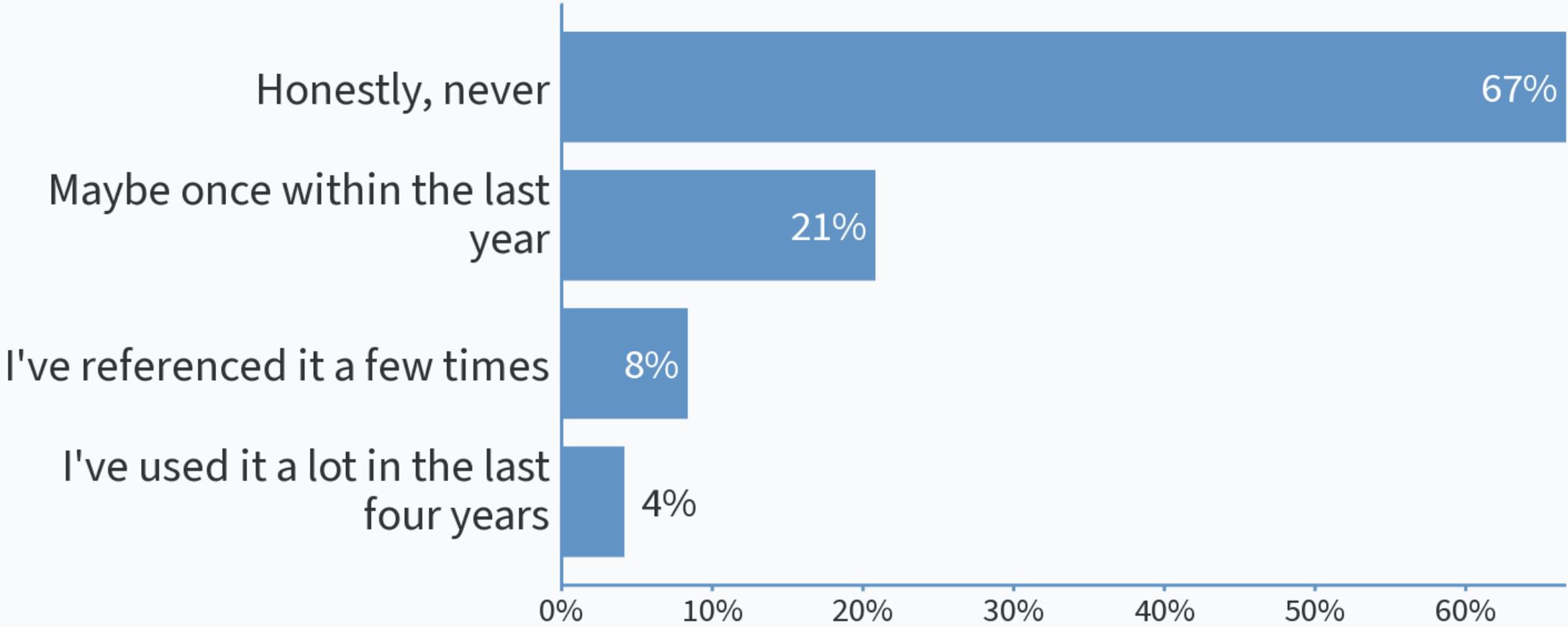


8 Acceptable w/
Technical Review

February 15, 2022

Risk	Category	Impact	Risk Score	Proposed Mitigation
Low procurement bids	Operational	- Low quality equipment and vehicles	2A	- Improve vehicle specifications during the bid process to emphasize technical merits of vendor proposals over cost - Use a scoring matrix that weights reliability and dependability higher than price
Ramp deployment failures	Operational	- Service delays - Injury to operators and/or passengers - Lawsuits	2B	- Update preventive maintenance practices to include complete evaluation of ramps, including immediately addressing rust and cycling lifts/ramps with sandbags to simulate real-world conditions - Train drivers to perform minor troubleshooting - Ensure pre-trip inspection of ramps and lifts
Current workforce is untrained and/or low on resources to conduct facility inspections	Human Resources	- Lacks bandwidth to perform mandated physical facilities condition assessment	2B	- MDOT MTA will provide trained consultants to assess facilities condition - Improve training for current staff - Hire the most qualified personnel for the job and provide continuous training
Small parking lots	Operational	- Insufficient capacity for the number of vehicles that are stored	2B	- Acquire/lease more property (adjacent or nearby), potentially for spares - Look for opportunities to share parking resources with other departments/agencies - Consider additional parking needs throughout service planning - Evaluate automated vehicle options
Vehicle breakdowns	Operational	- Service delays	3A	- Rely on spare vehicles to supplement service; - Ensure vehicles meet useful life standards - Fund vehicle replacements quickly to minimize funds lost for excessive maintenance procedures - Ensure compliance with manufacturer's maintenance standards - Modernize the fleet; - Complete regular preventative maintenance - Perform pre-trip inspections and empower drivers to report problems as soon as possible

When was the last time you referred to the Risk Register in the TAMP?





**KEEP
CALM
IT'S
LUNCH
TIME**

**Be back at
12:30pm!**

*Please turn on your
camera or type
“back” into the chat
to let us know you are
back.*

Agenda

Welcome & Introductions

TAM 101, TAMP, and Federal Regulations Overview

Risk Management & the LOTS Group TAMP

Lunch Break

Part 1 Review

Updating Enterprise Risks

Updating Project Risks

Wrap Up & Next Steps

POP Quiz

1. Risk is generally expressed as a combination of what two things?
 - *Potential event and impact*
2. Which of the five steps in the risk management process are we focused on today?
 - *Identifying, analyzing, and evaluating*
3. Which risk management levels are we focused on?
 - *Enterprise/program and asset/project*
4. How many risk categories do we have for today?
 - *Five: Asset Information & Technology, Financial/ Economic, External/Legal, Human Resources, Operational*
5. How do we calculate Risk Score?
 - *Risk Score (RS) = Likelihood (L) x Consequence (C)*
6. How many risk regions did we define earlier?
 - *Three: Unacceptable, Acceptable, Tolerable*
 - *Four: Unacceptable, Undesirable, Acceptable with Review, Acceptable without Review*

Updating Enterprise Risks

Enterprise/Program Risk Activity

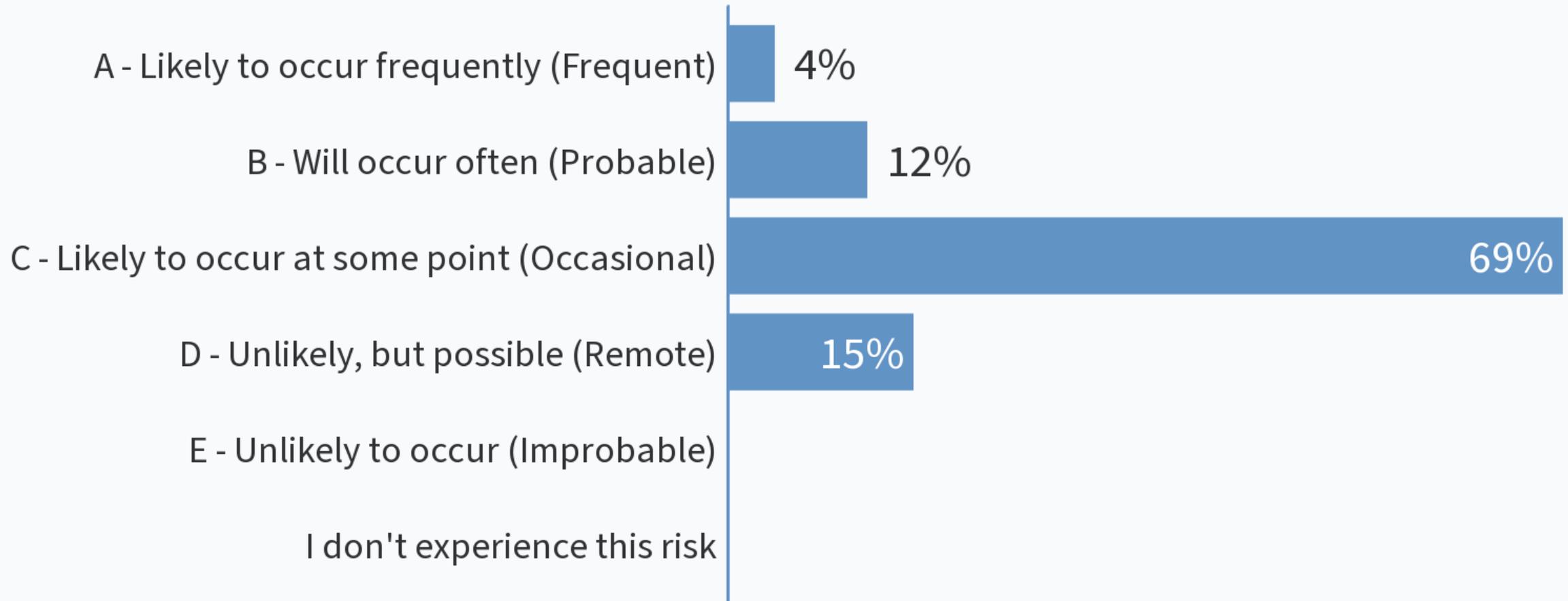
- Purpose:
 - To confirm 2018 enterprise/program risks
 - To brainstorm new enterprise risks that affect the asset management program
- Two Activities
 - Poll Everywhere
 - Think-Pair-Share Activity:

Confirming Enterprise/Program Risks

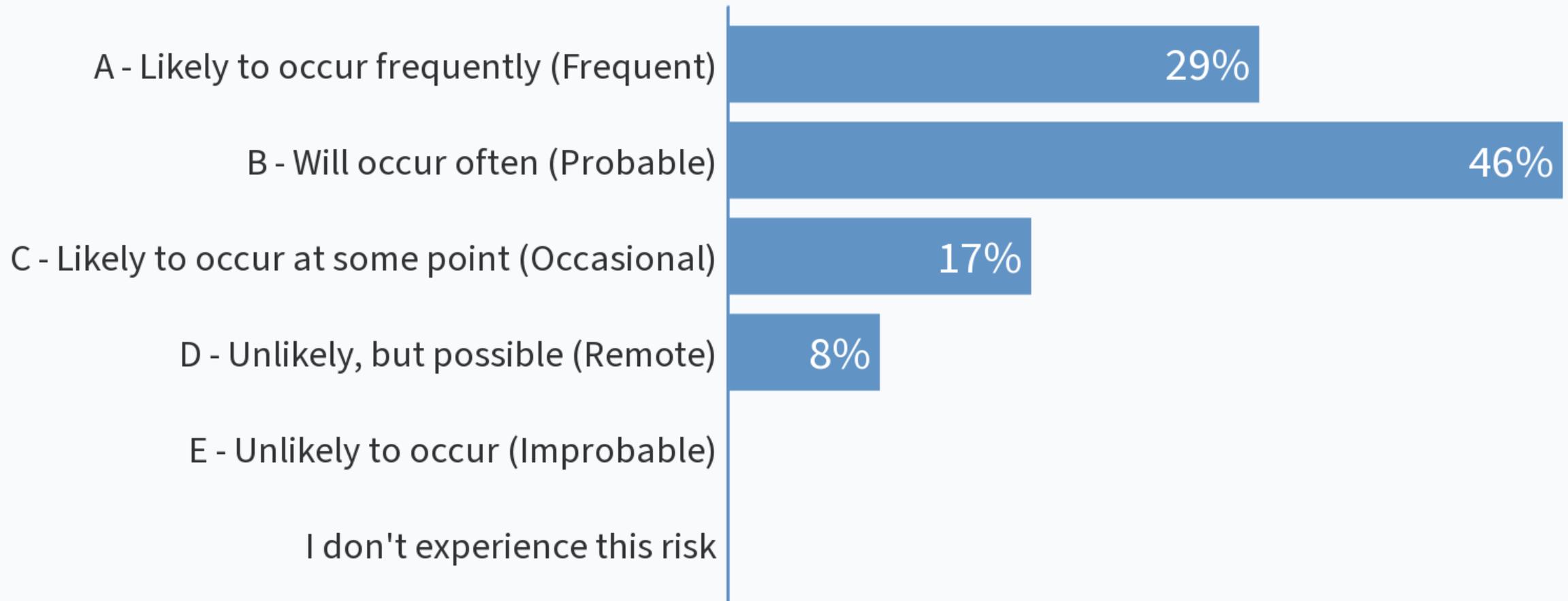
Poll Everywhere - On each of the following slides, indicate if this risk is still relevant for your agency and how likely it is to occur.

PROBABILITY LEVEL	SPECIFIC INDIVIDUAL ITEM	FLEET OR INVENTORY	FREQUENCY
Frequent A	Likely to occur frequently in the life of a system	Continuously experienced	> 1 event / 2 weeks
Probable B	Will occur often in the life of a system	Will occur frequently in the system	> 1 event / month; < 24 events / year
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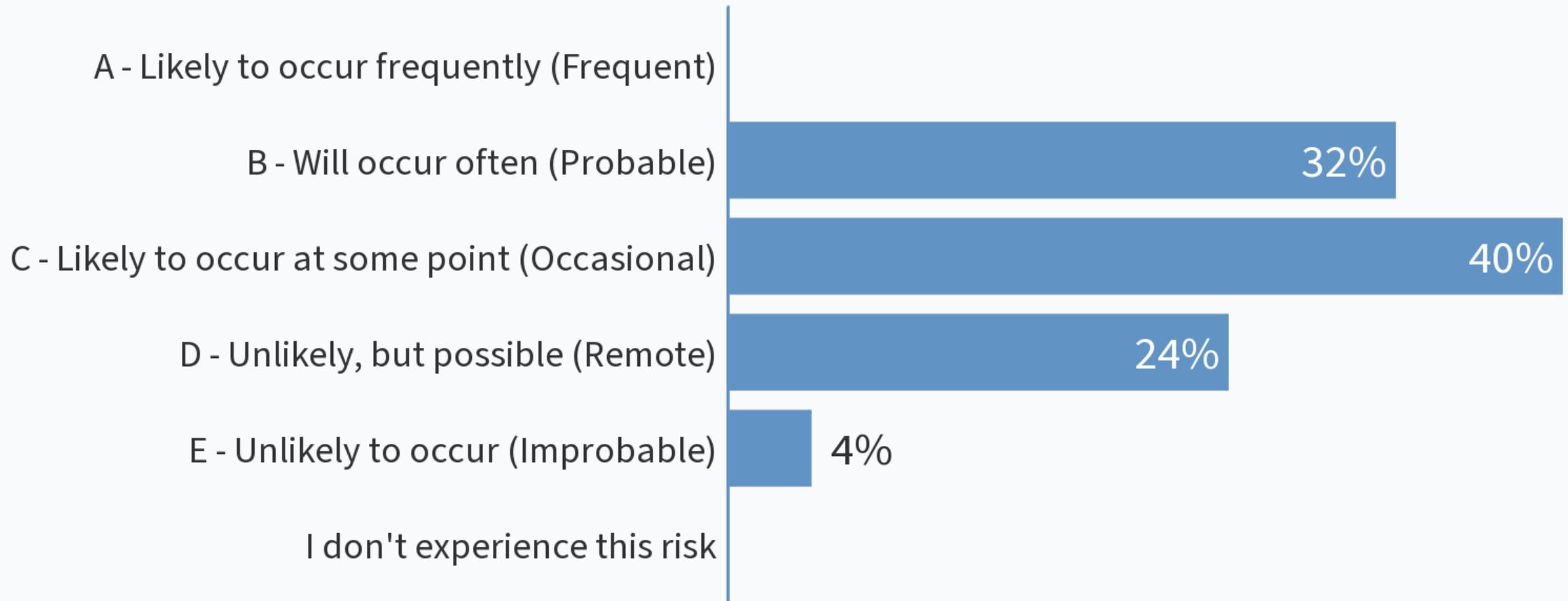
Implementation of new transportation technologies disrupting service and management of assets



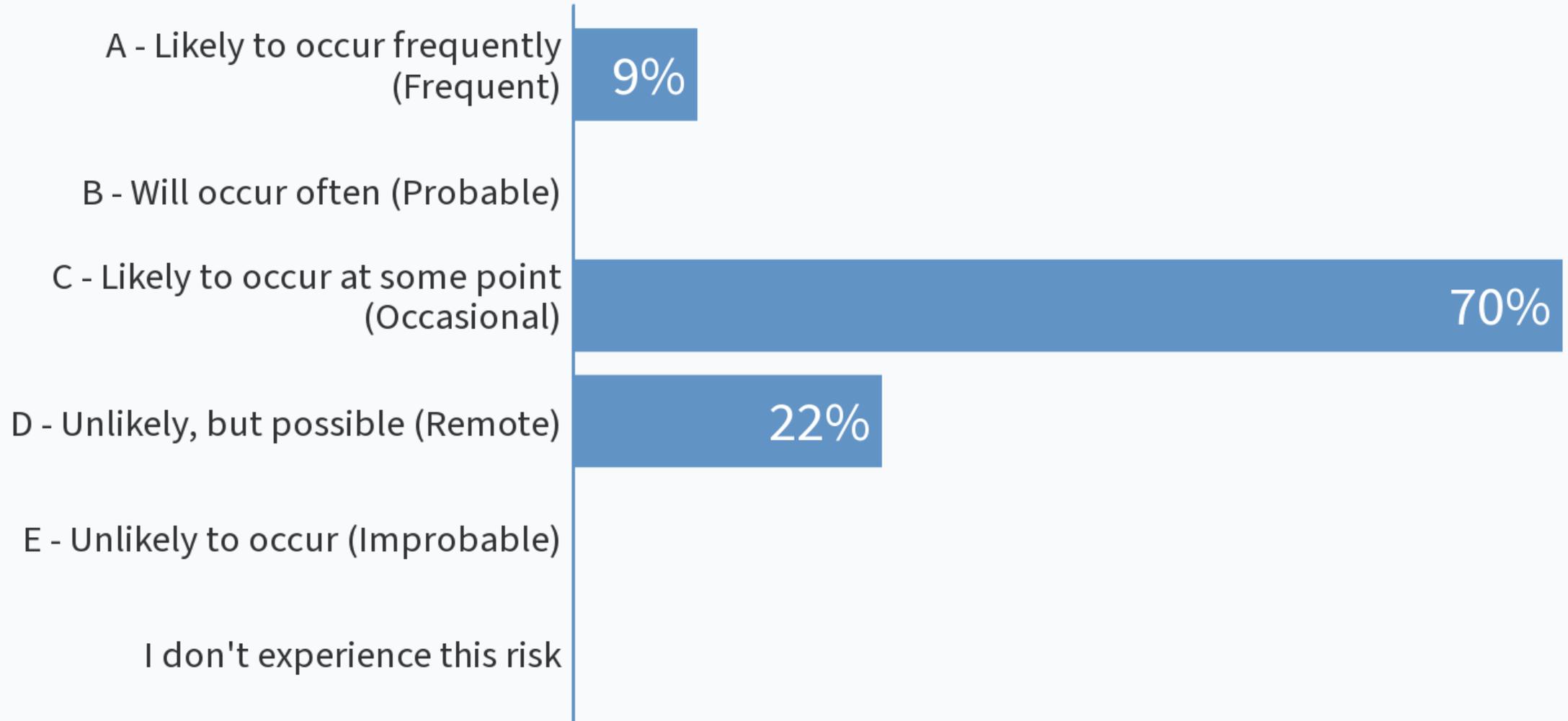
Changing demographic of riders - increased demand for ADA service



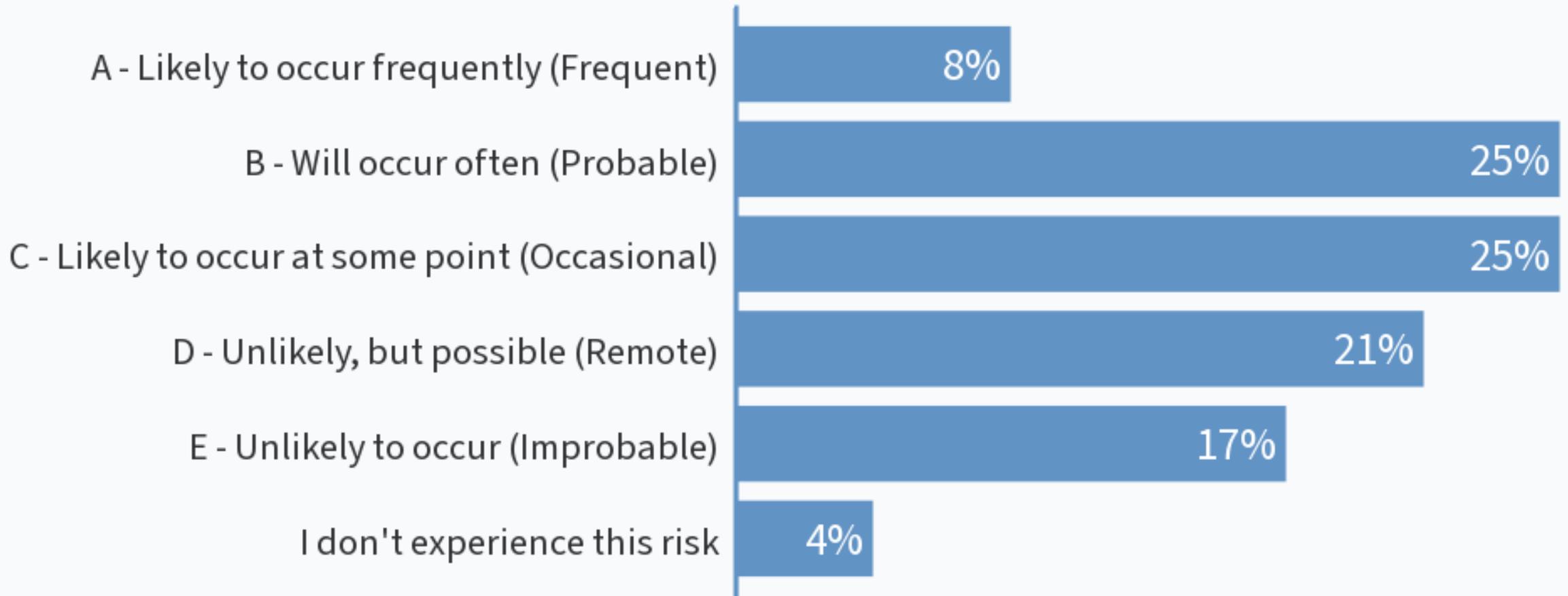
Unexpected demand on existing system due to economic development (e.g. new job center)



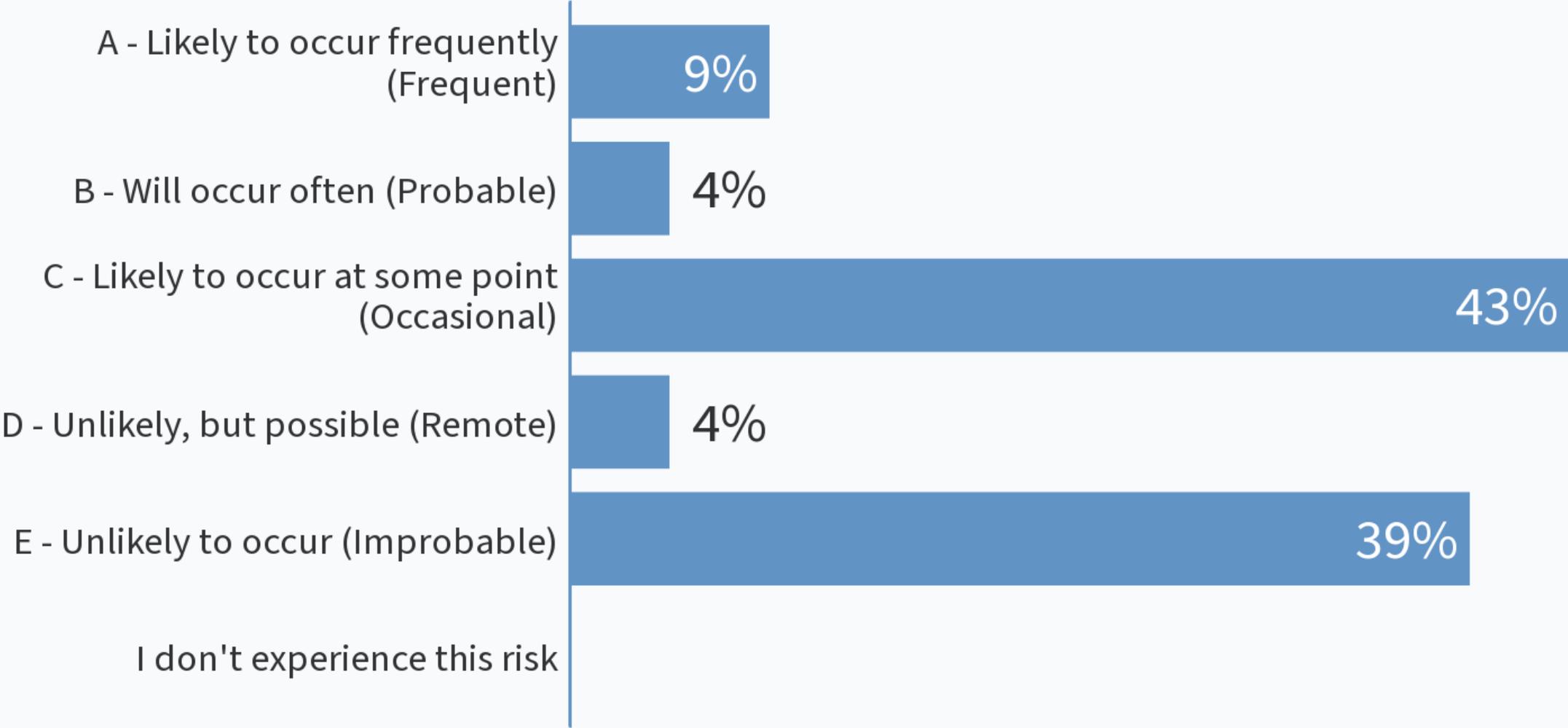
Federal legislation and funding uncertainty



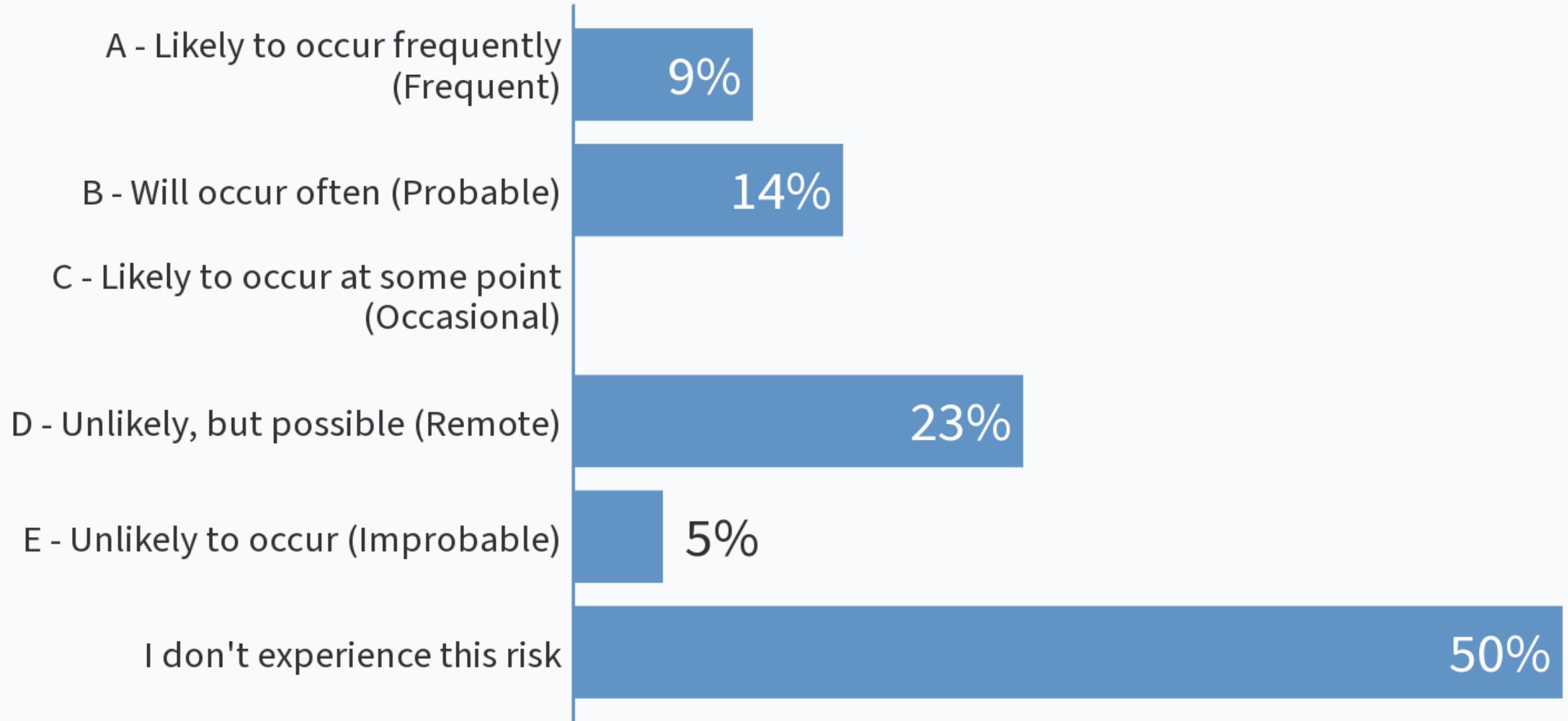
Insufficient county-level funds to match federal and state funding



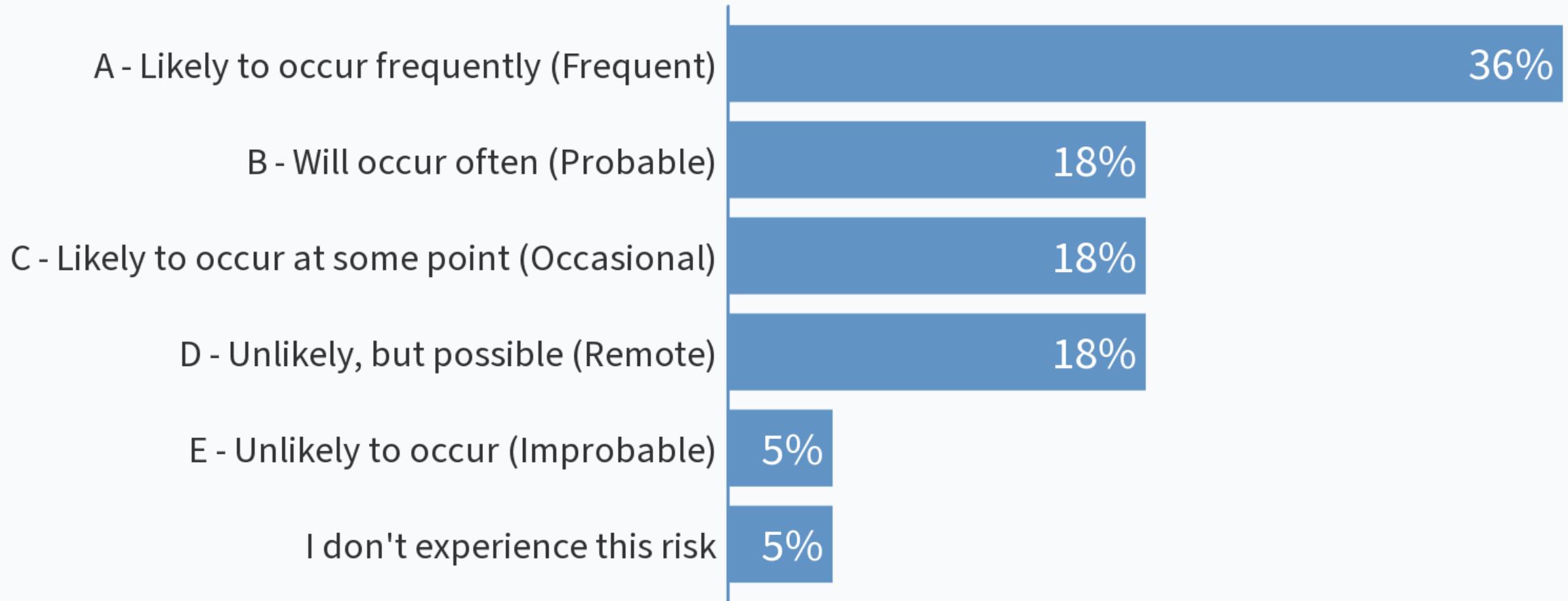
Difficulties maintaining operational budget efficiency



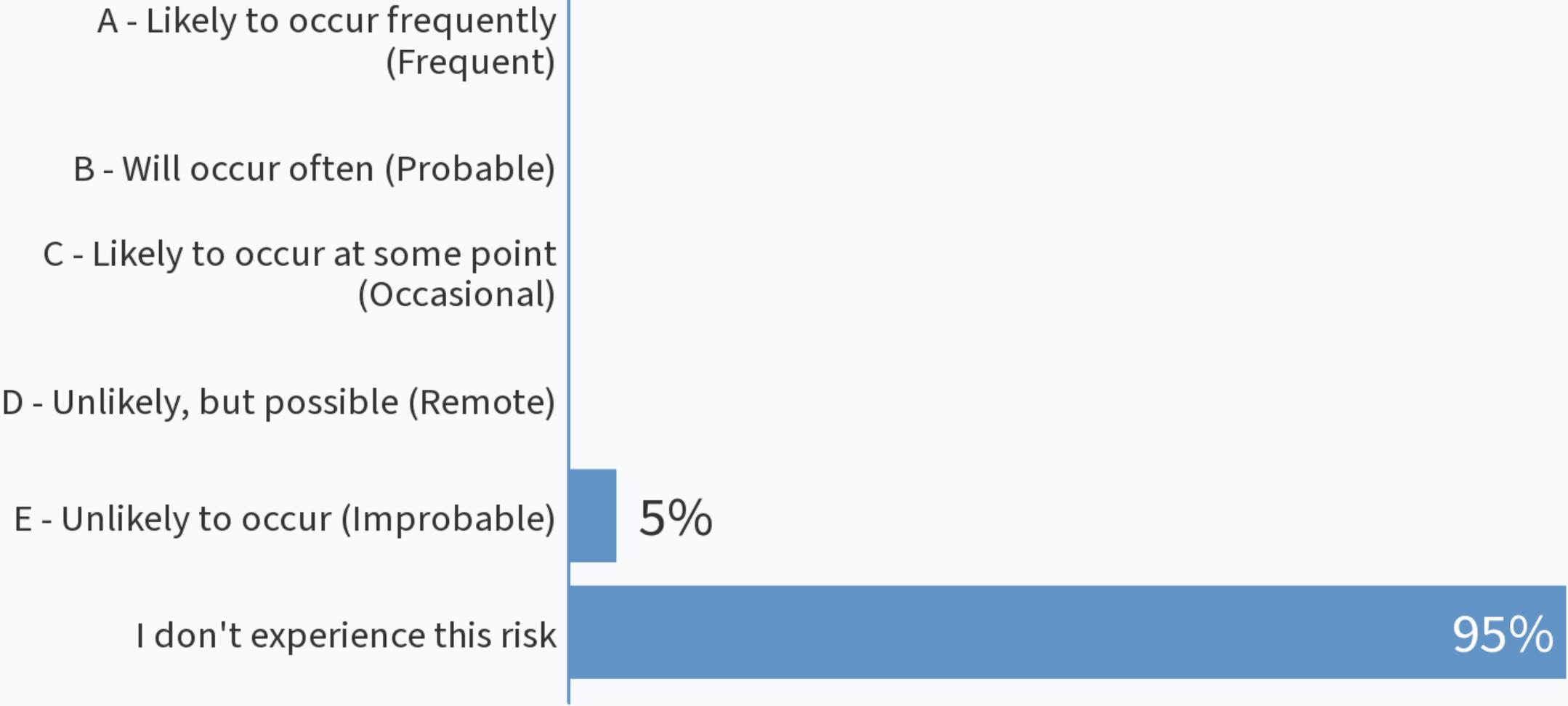
Fare evasion



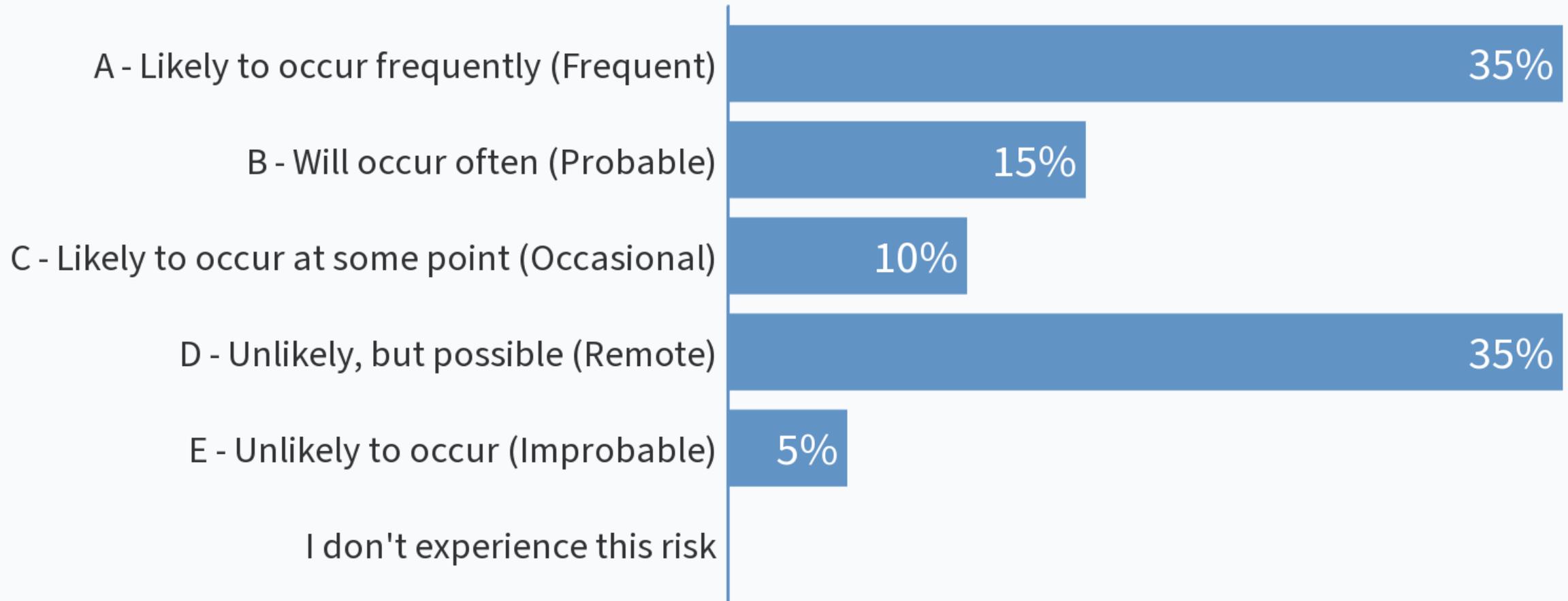
Resource capability and competence - level of qualified personnel to support asset management activity



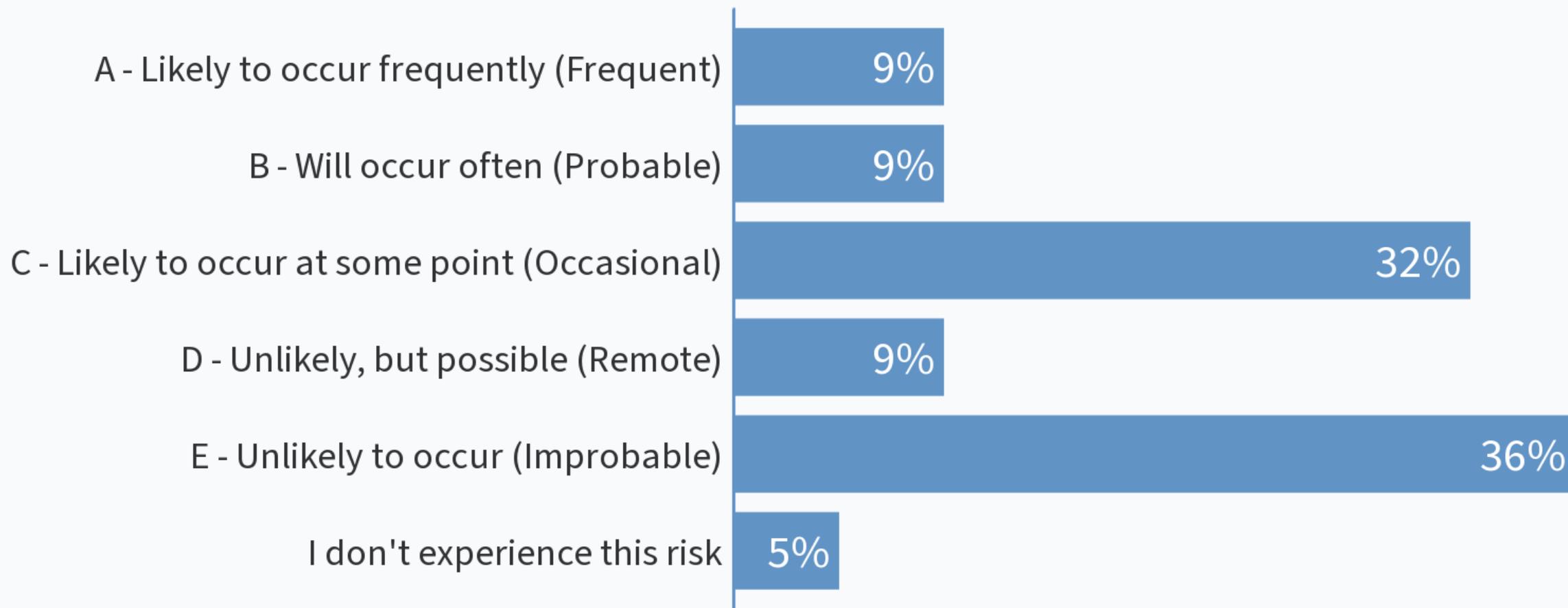
Loss of Department of Health Services (DHS) Contract staff



Leadership turnover resulting in loss of institutional knowledge



Insufficient funding and procurement mechanisms for rolling stock and associated equipment



Brainstorming New Enterprise Risks

- Think-Pair-Share Activity:
 - 5 minutes independent brainstorming
 - 10 minutes working in groups of 3
 - 15 minutes debrief

Key questions for consideration:
What's the risk? What's likely to happen? What's the impact?

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External/Legal	Risks related to external factors that are not easily controlled or failure to comply with standards, policies, etc. and the impact of changes in legal requirements.
Human Resources	Risks related to changing resource needs or internal stakeholder expectations.
Operational	Risks directly related to the ability to provide transit service operation

Updating Asset/Project Risks

Asset/Project Risk Activity

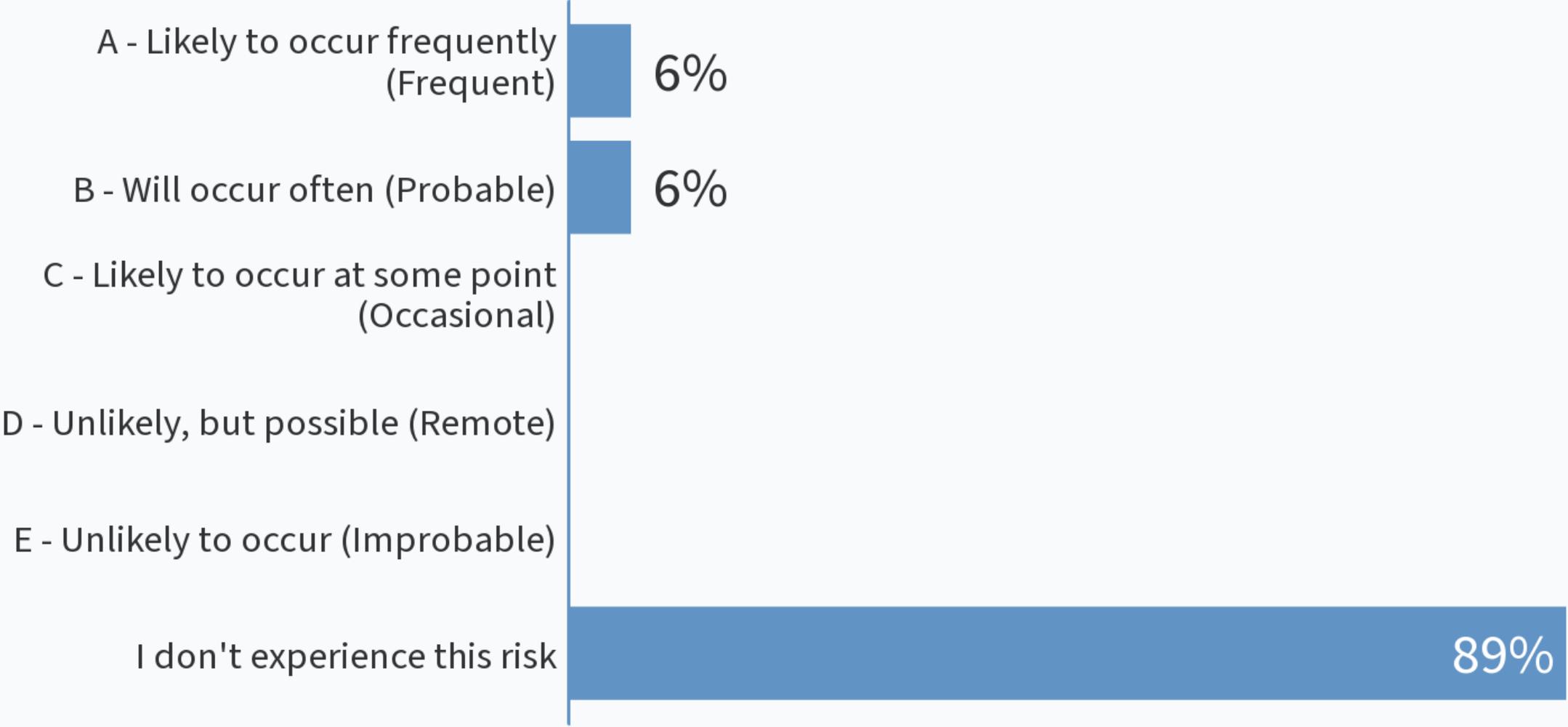
- Purpose:
 - To confirm 2018 asset/project risks
 - To brainstorm new risks that affect specific assets in the asset management program
- Two Activities
 - Poll Everywhere
 - Think-Pair-Share Activity:

Confirming Asset/Project Risks

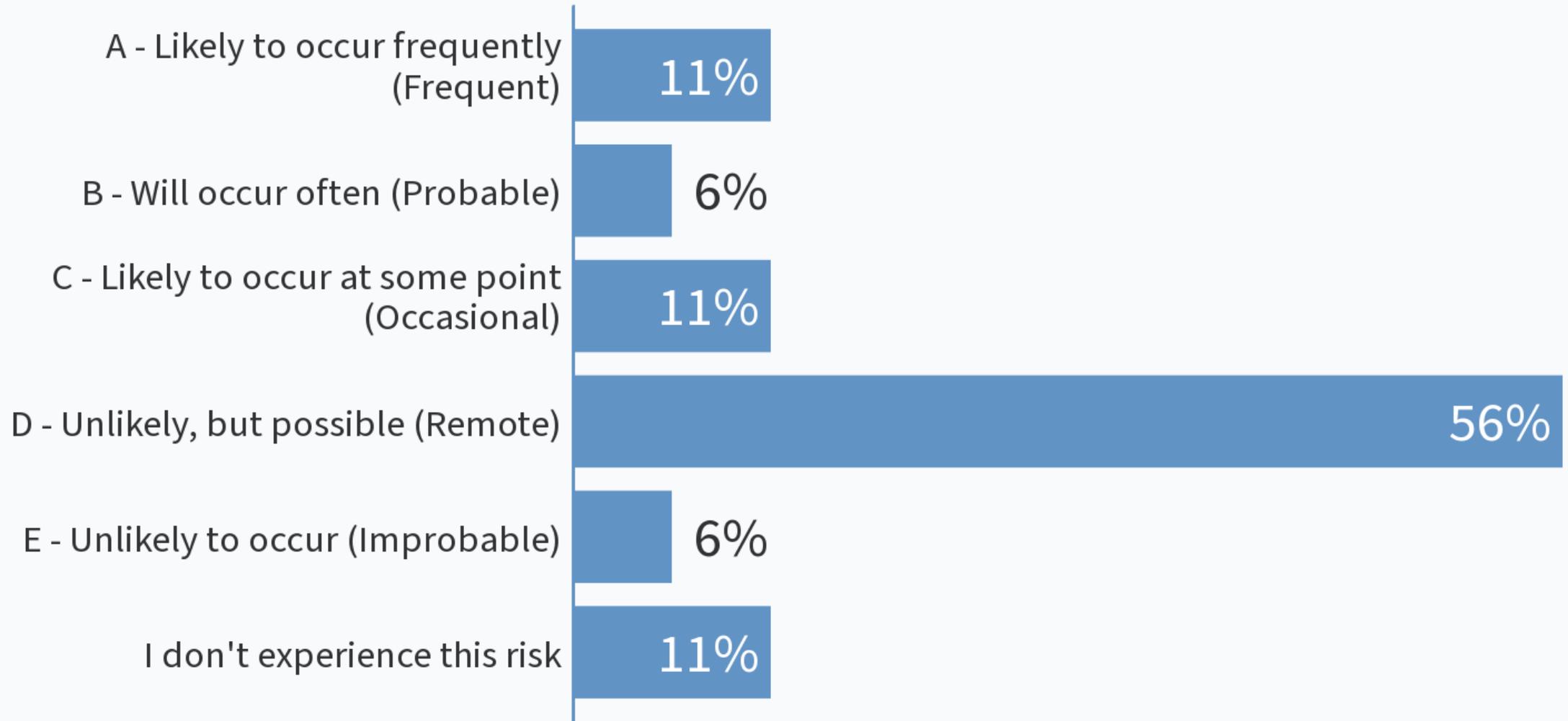
Poll Everywhere - On each of the following slides, indicate if this risk is still relevant for your agency and how likely it is to occur.

PROBABILITY LEVEL	SPECIFIC INDIVIDUAL ITEM	FLEET OR INVENTORY	FREQUENCY
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Occasional C	Likely to occur sometime in the life of an item	Will occur several times	>1 event / year; < 5 during 5 years
Remote D	Unlikely, but possible to occur in the life of an item	Unlikely, but can be expected to occur	> 1 event / 5 years; < 10 during 10 years
Improbable E	So unlikely, it can be assumed occurrence may not be expected	Unlikely to occur, but possible	< 1 event during 20 years

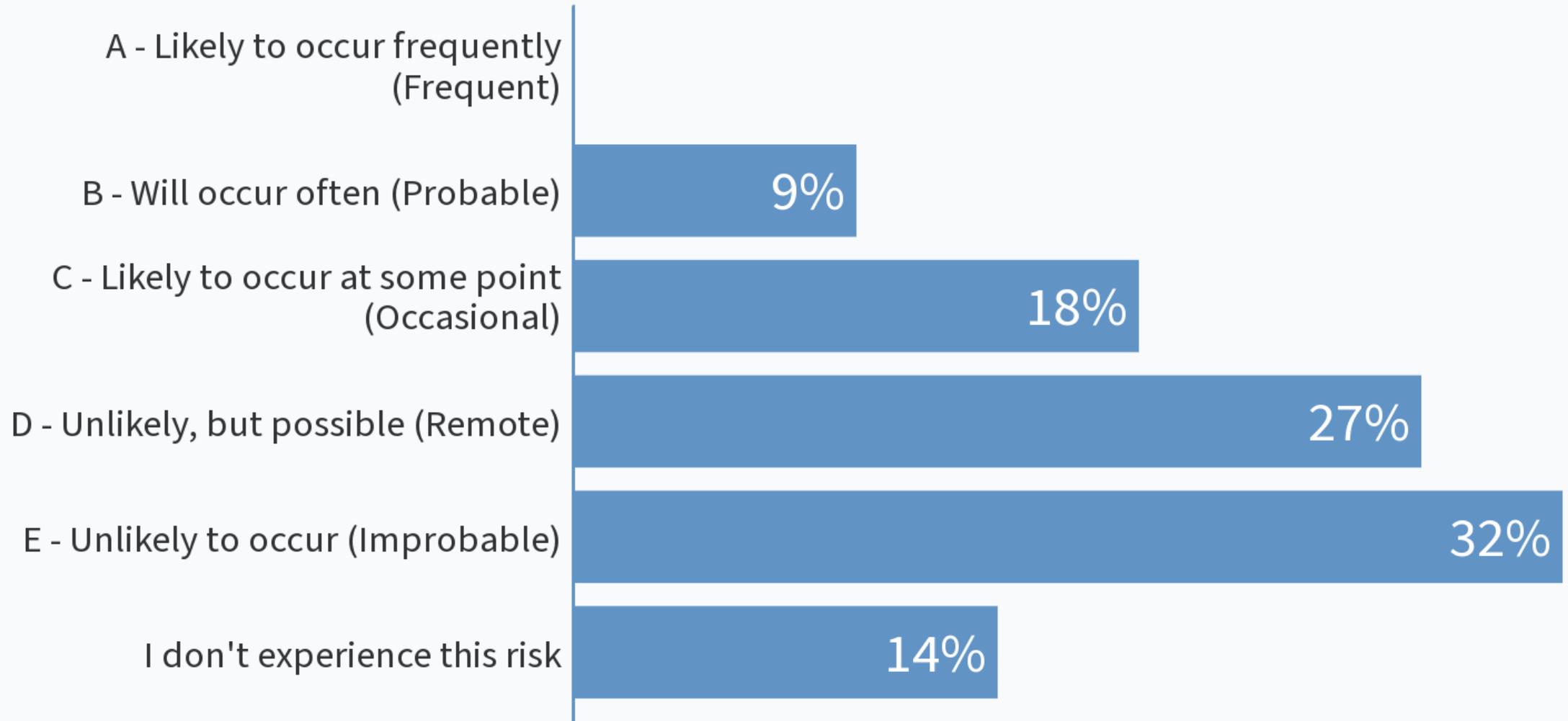
MaxxForce International engine defects



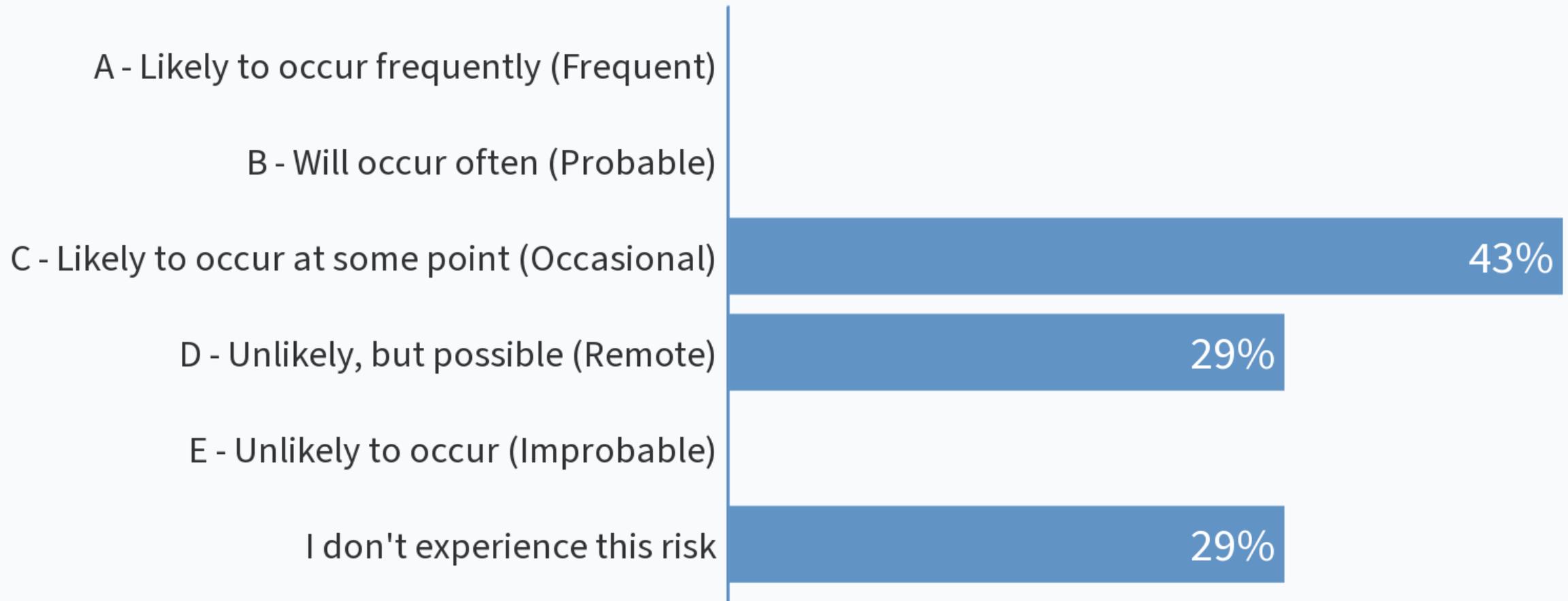
Low procurement bids



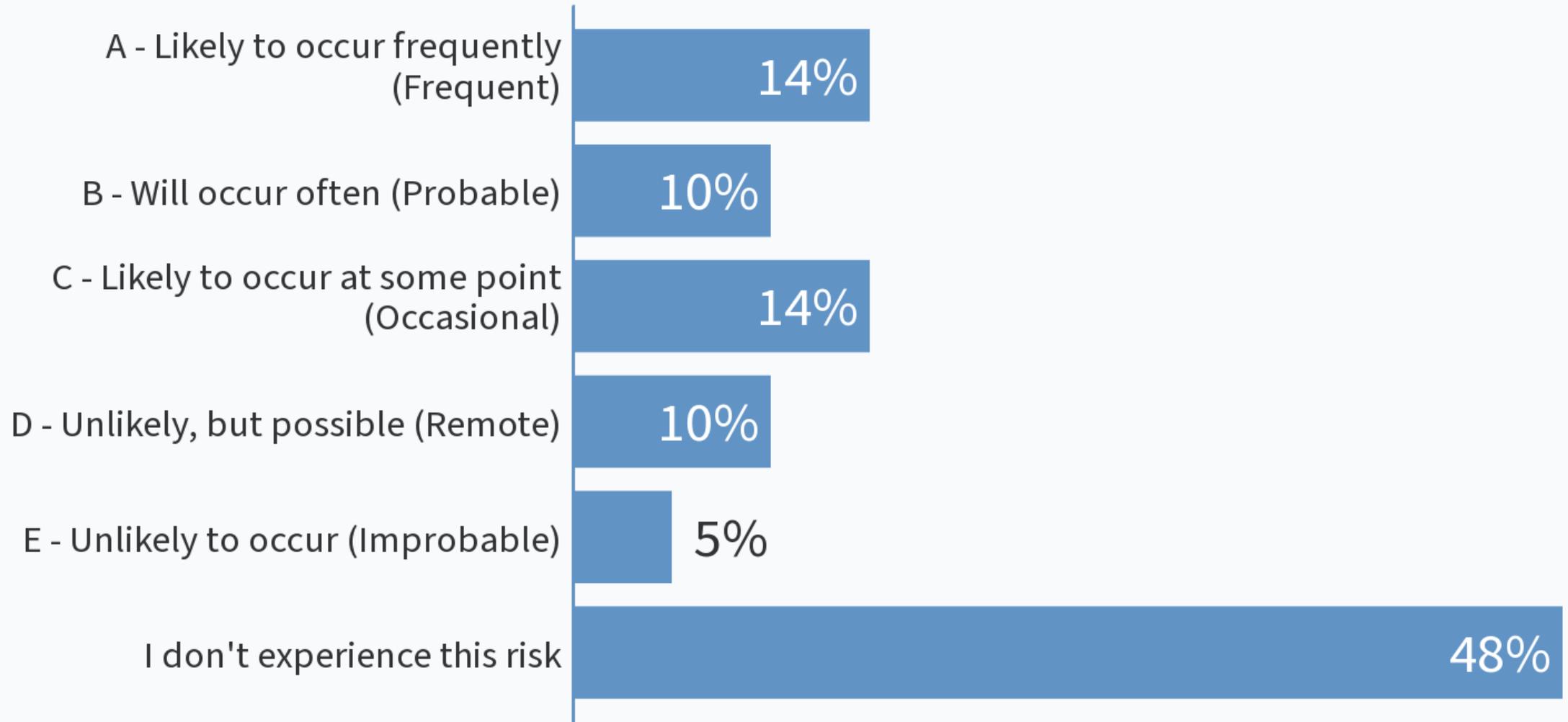
Ramp deployment failures



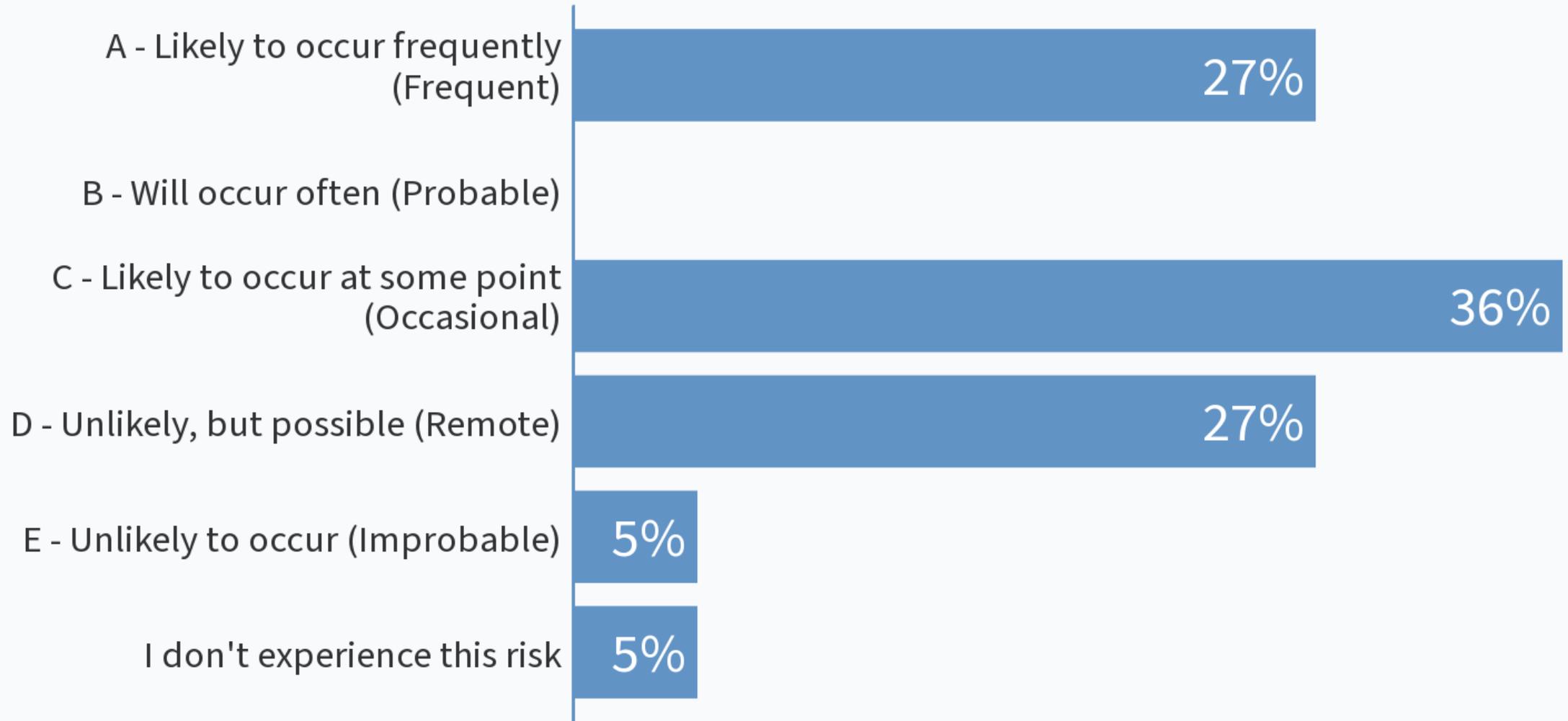
Current workforce is untrained and/or low on resources to conduct facility inspections



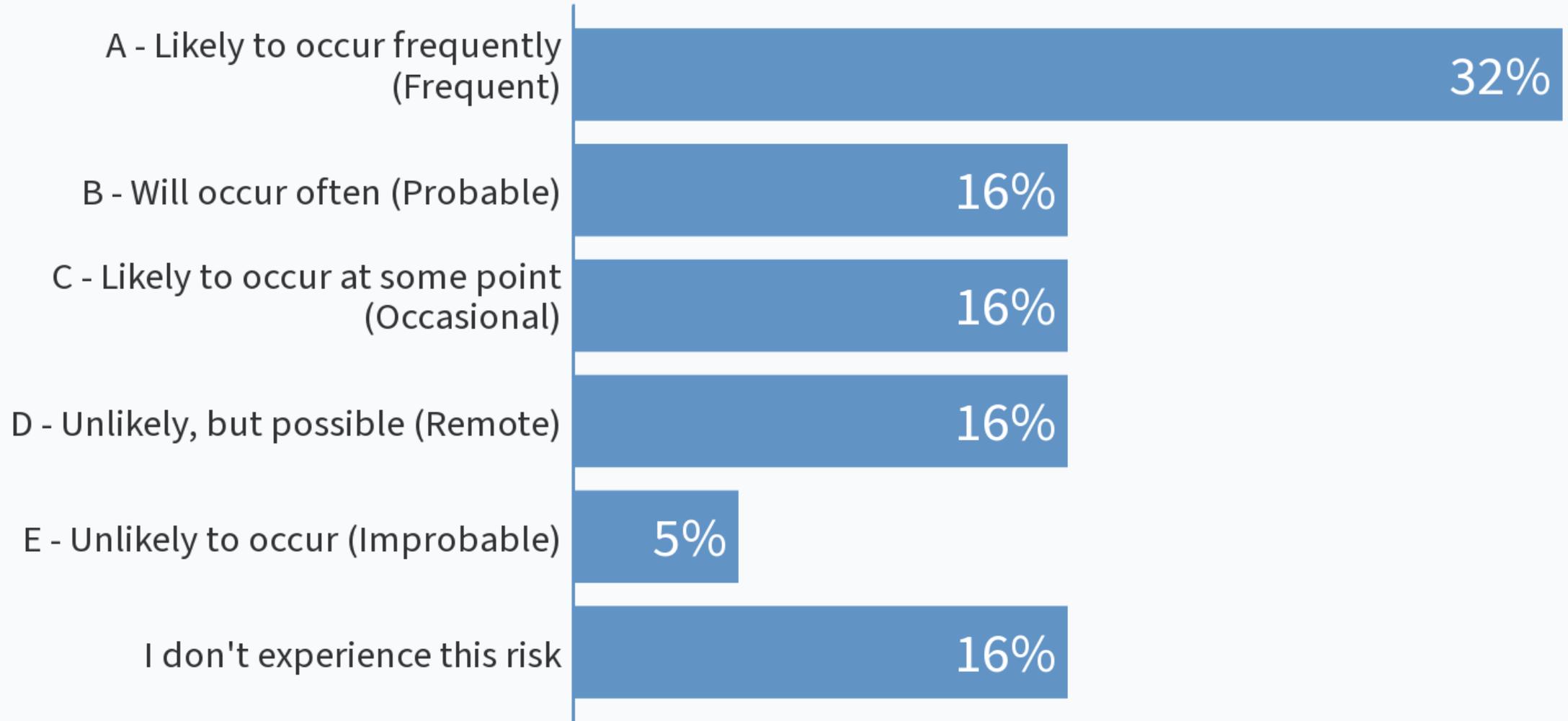
Small parking lots



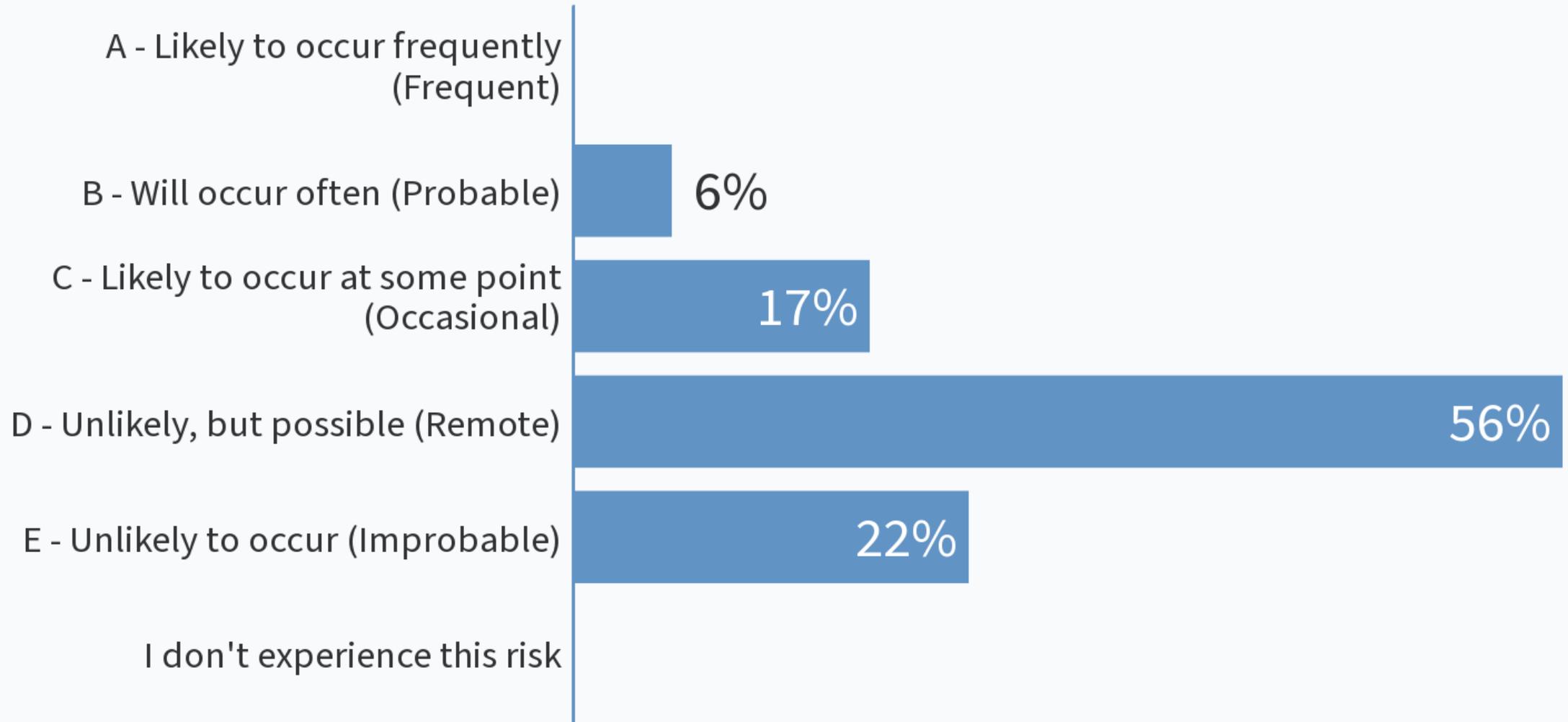
Vehicle breakdowns



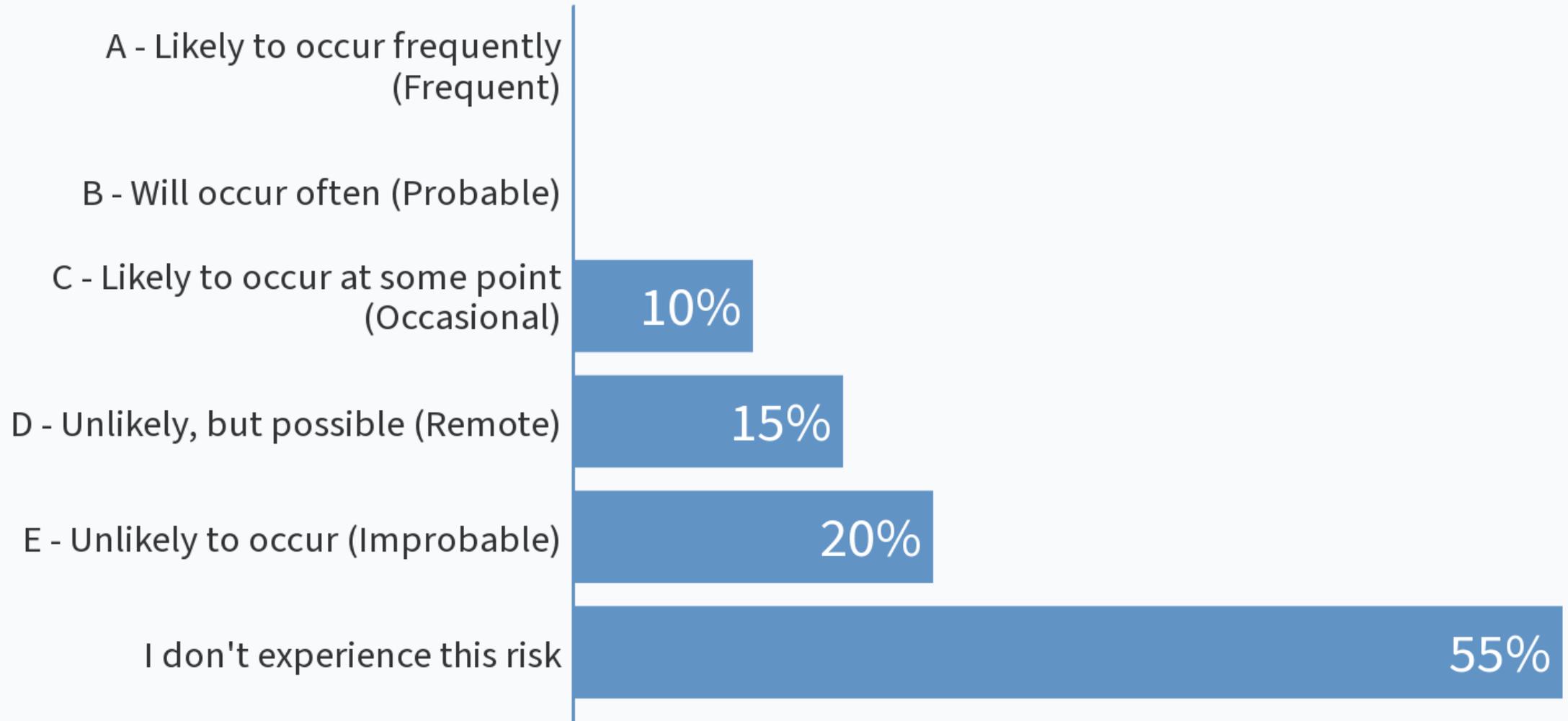
Major equipment malfunctions (e.g. bus wash)



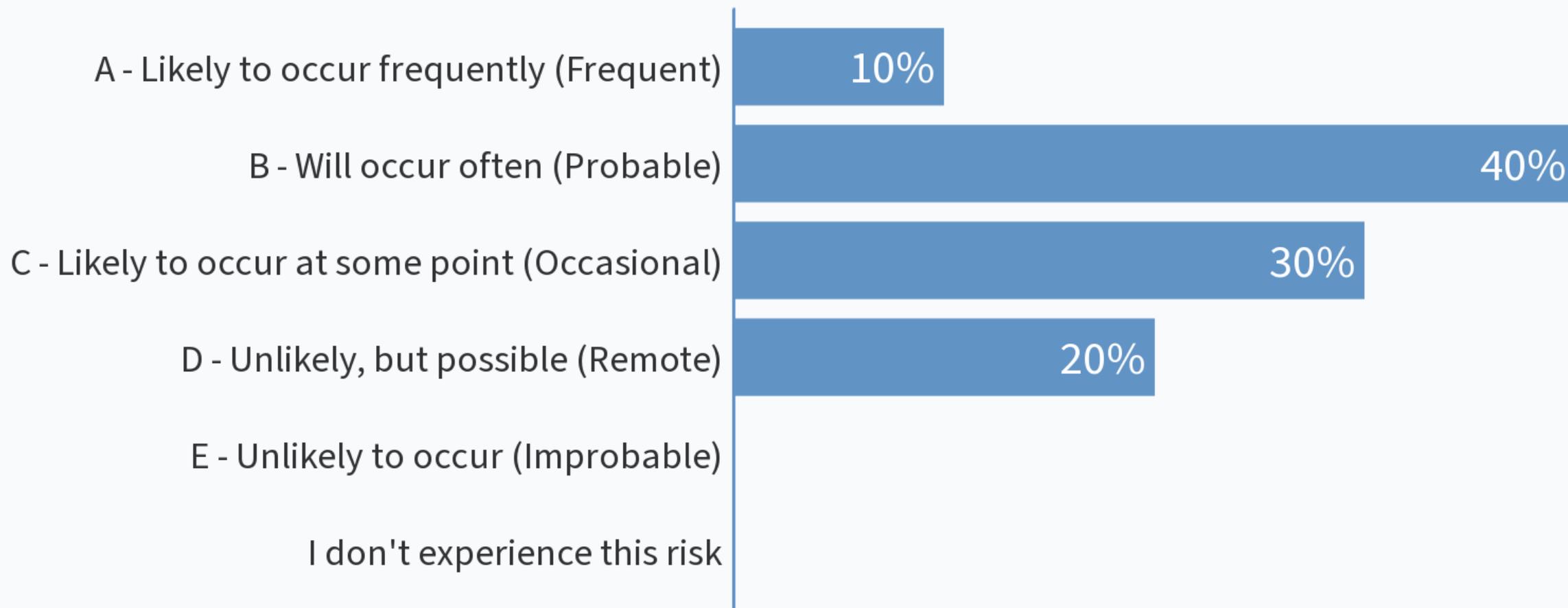
Major accidents



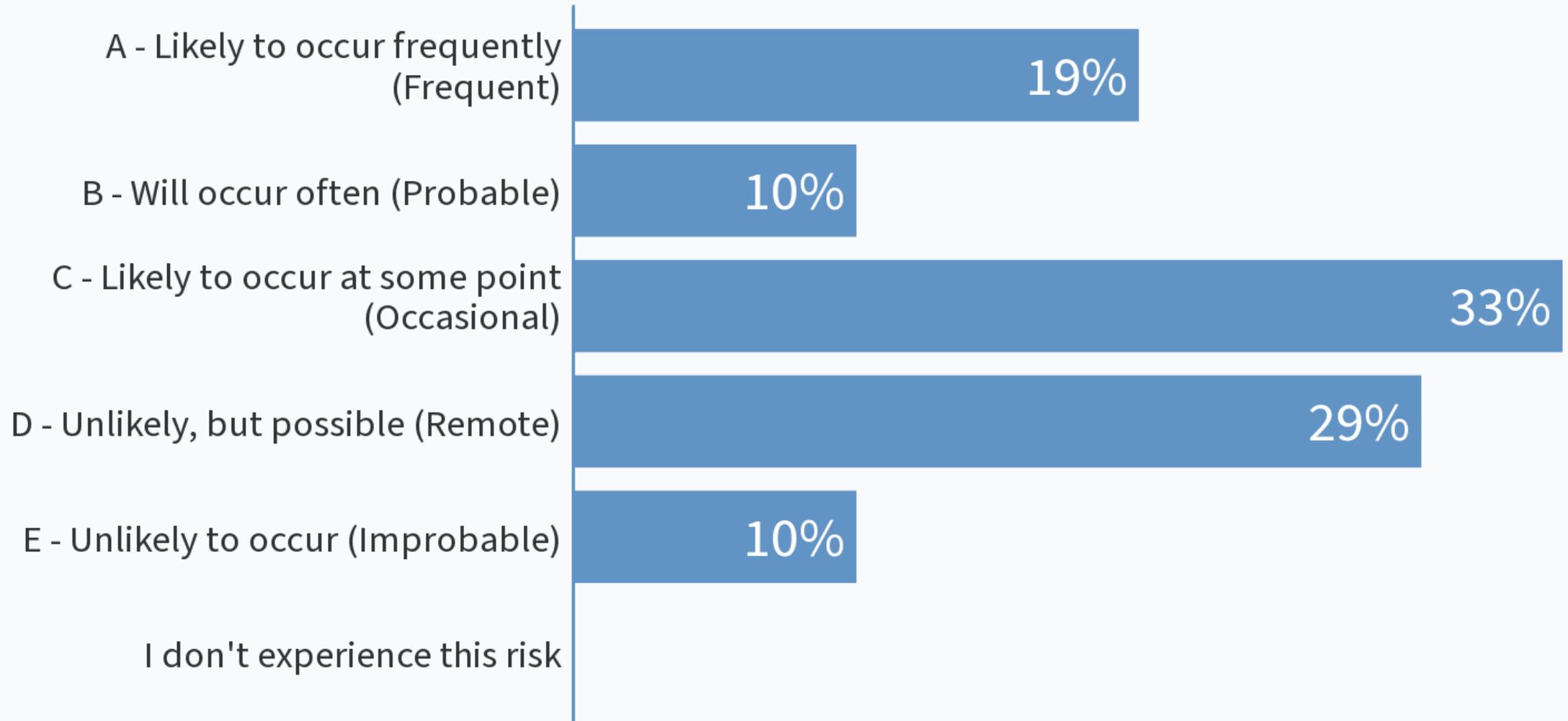
Vehicle theft



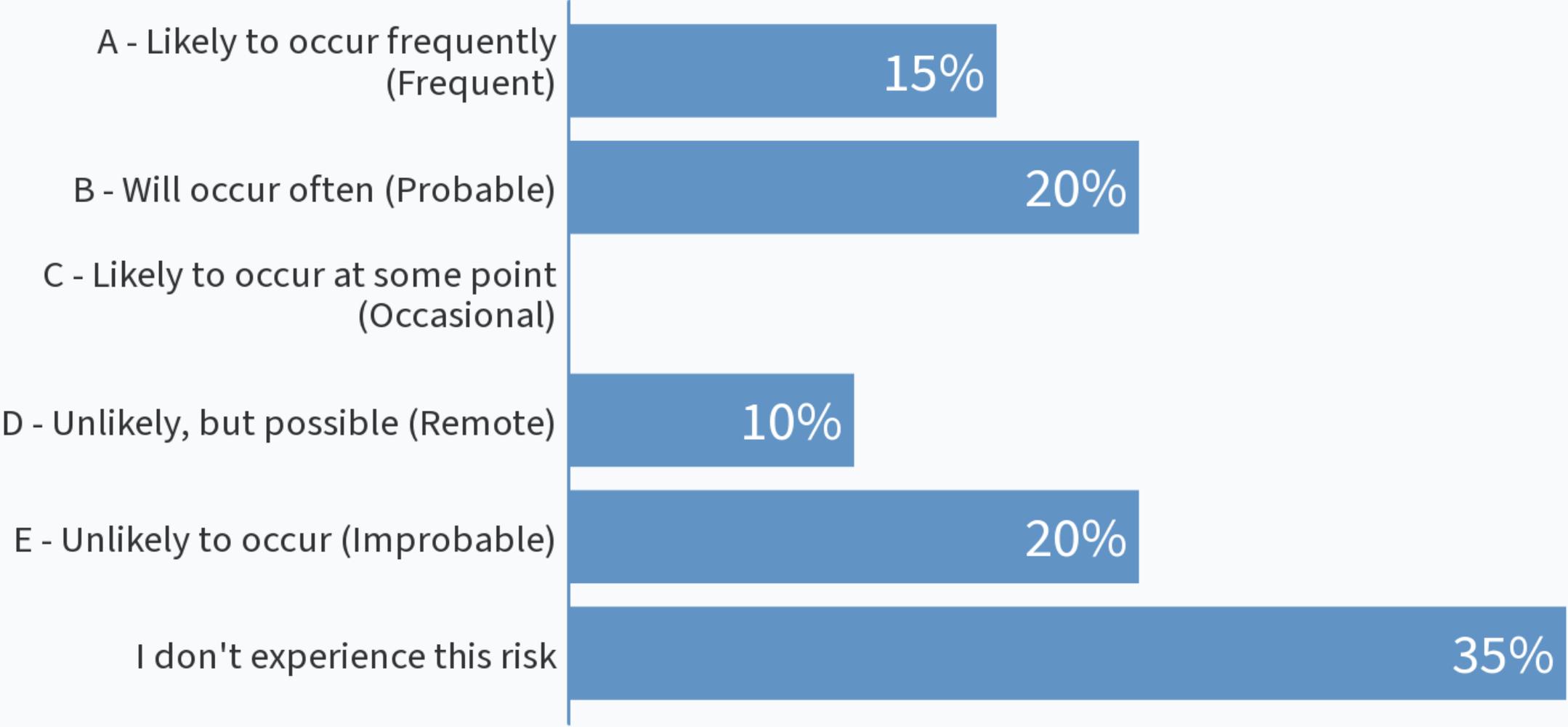
Vehicle condition deterioration (due to age, mileage, and body damage)



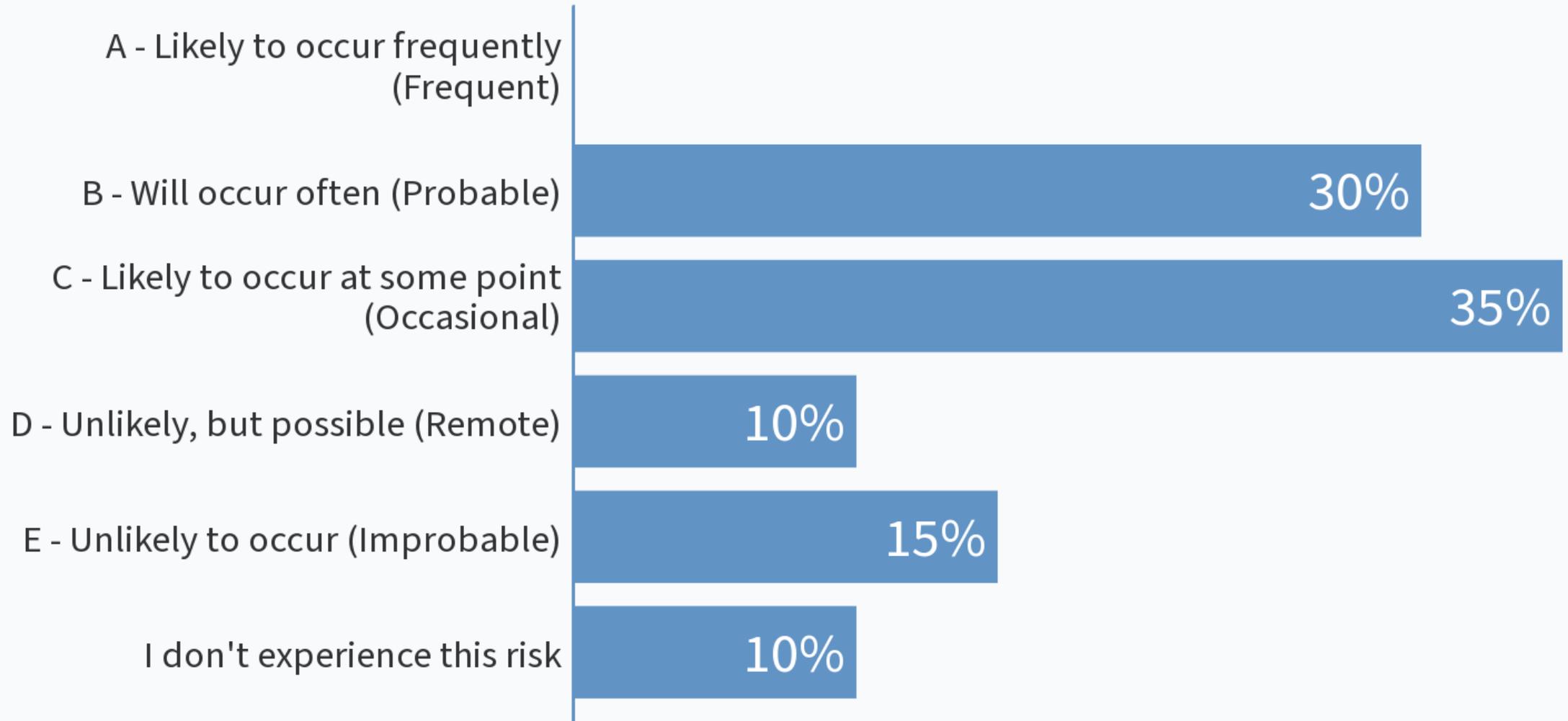
Bus collisions with fixed objects



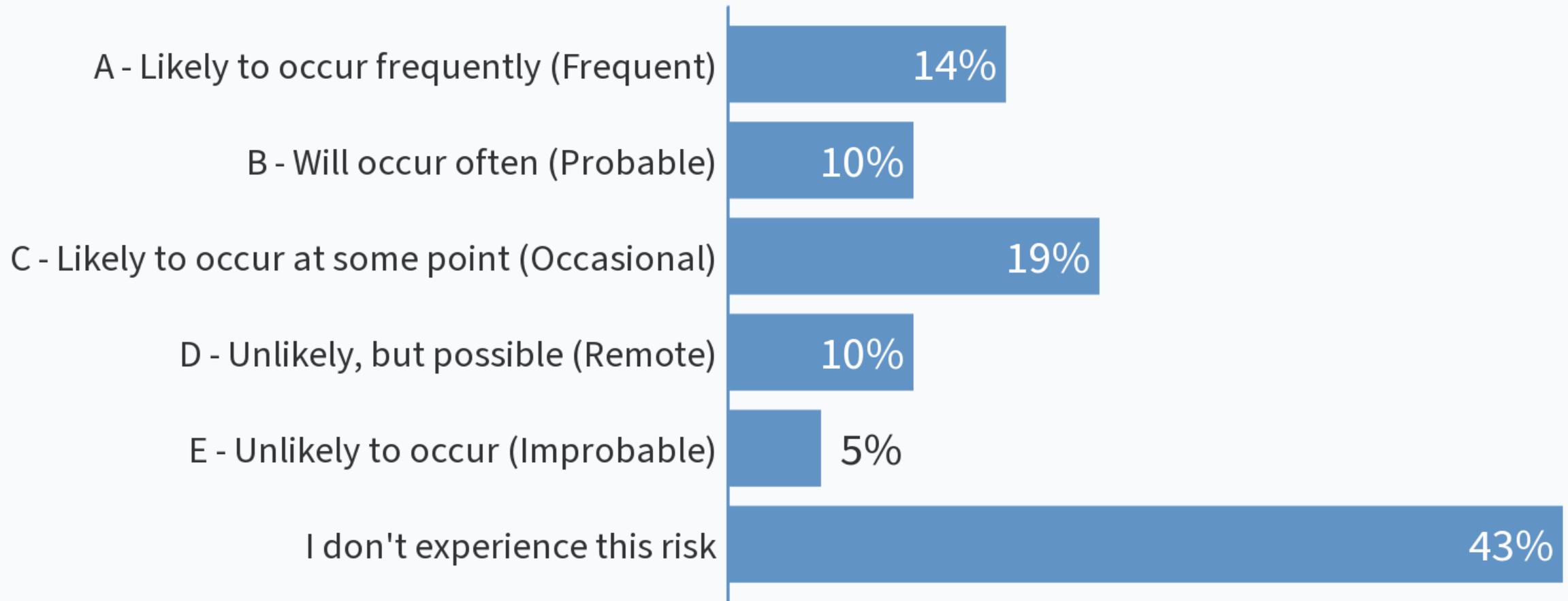
Minimal storage space



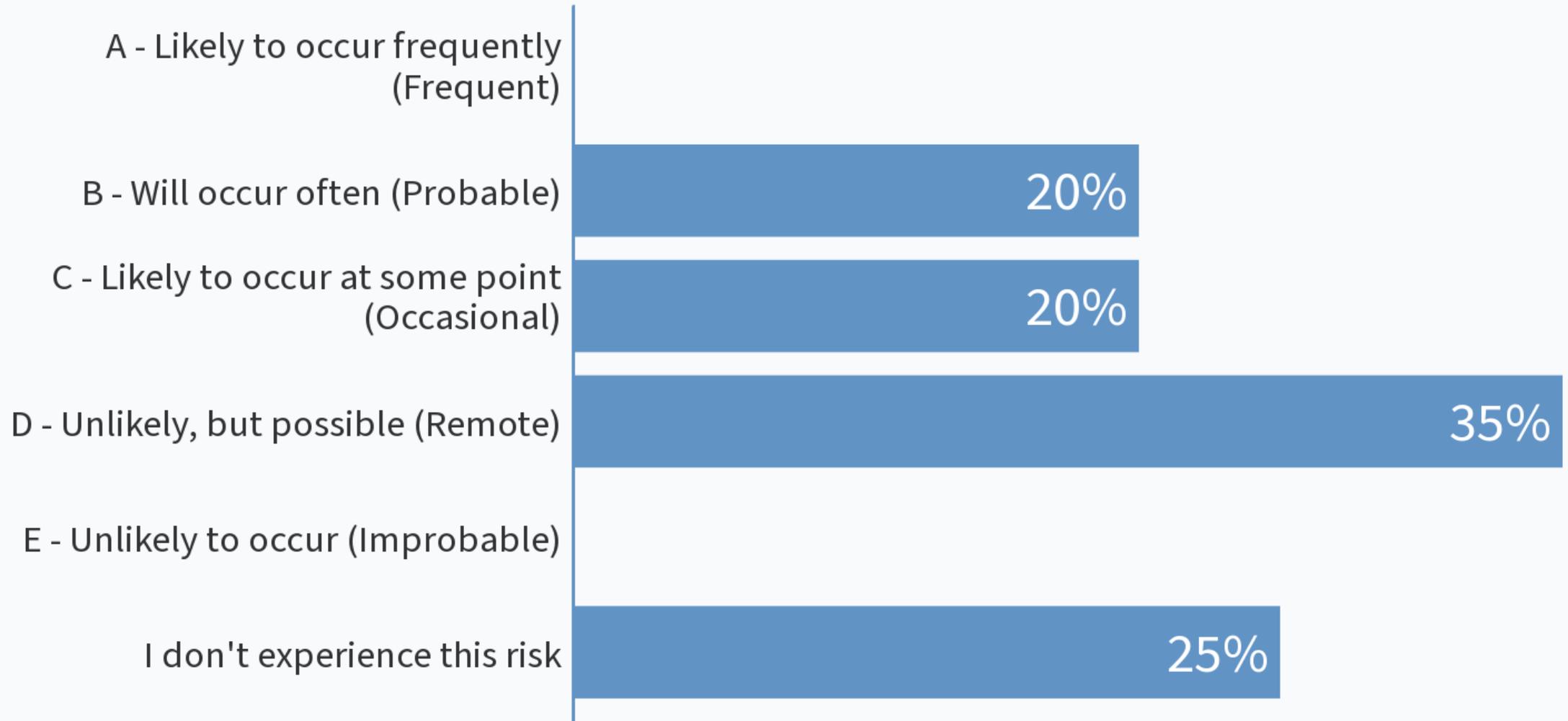
Poor roadway conditions



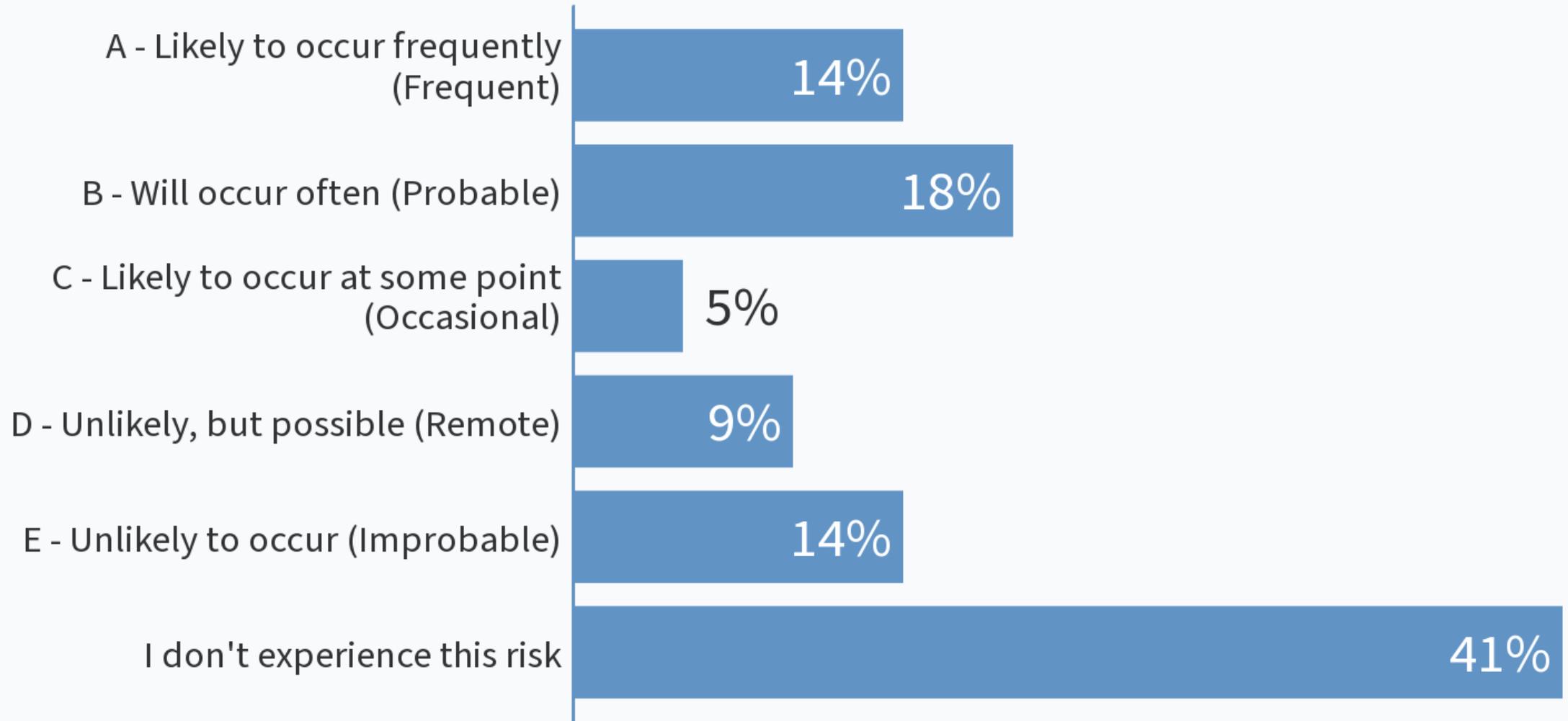
Frequent turnover in contracted demand response workforce



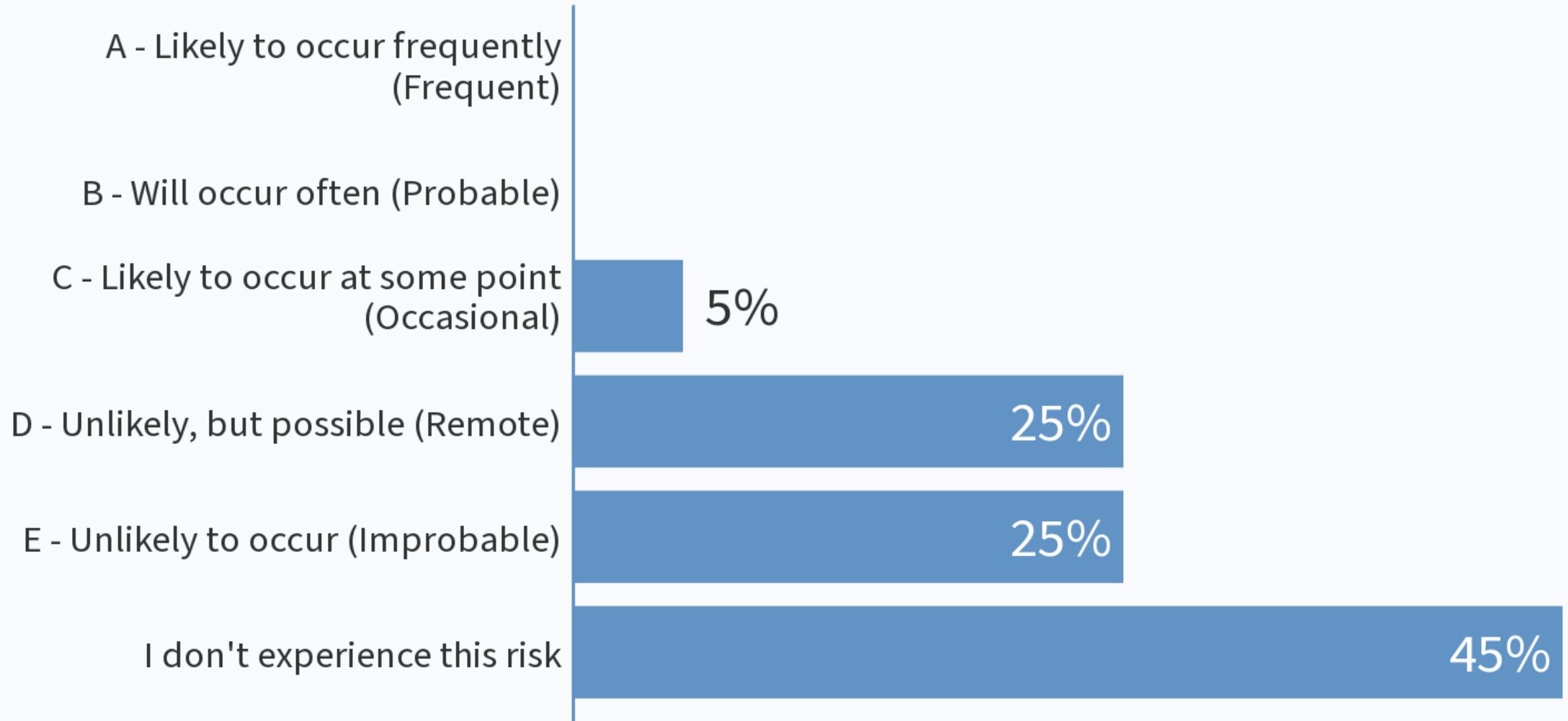
Scheduling software failure



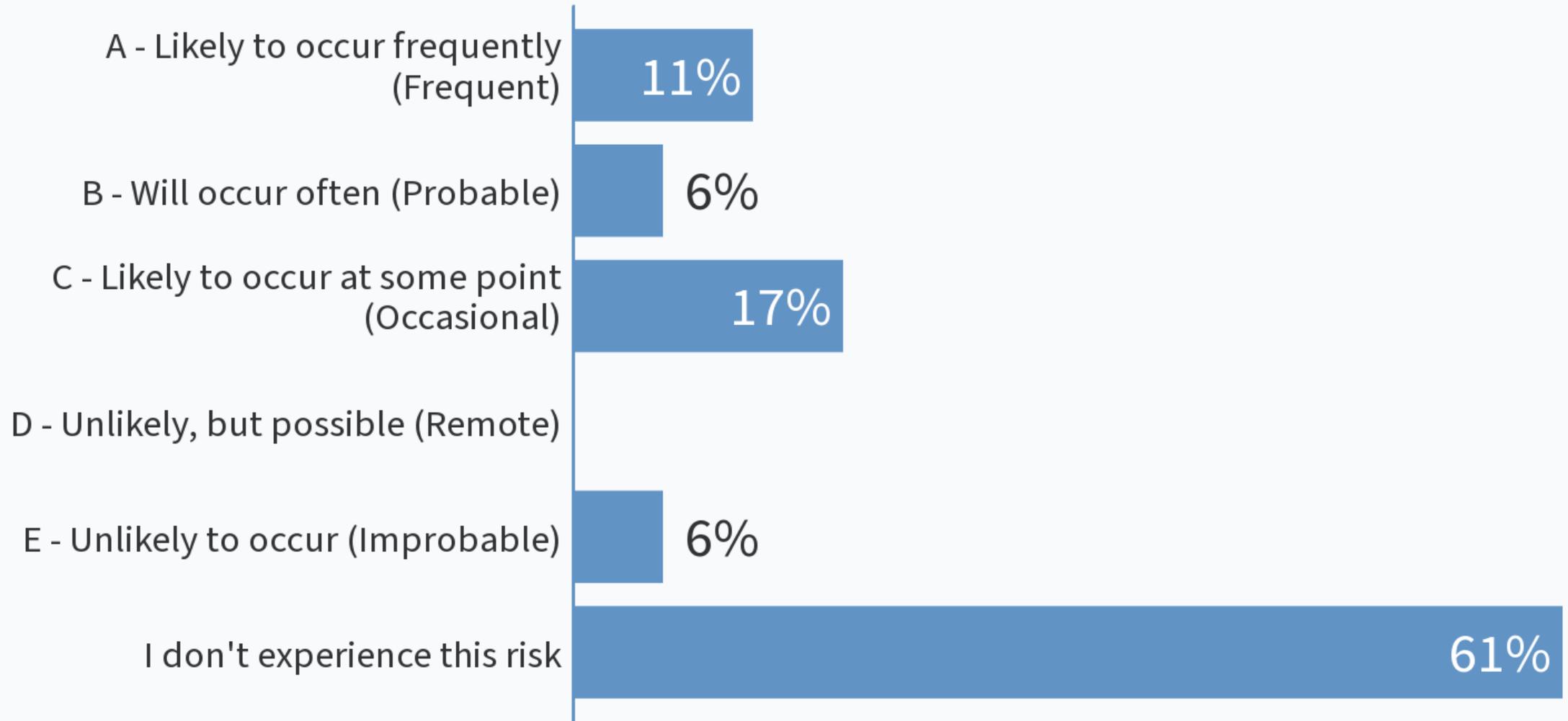
Insufficient space for current staff in offices



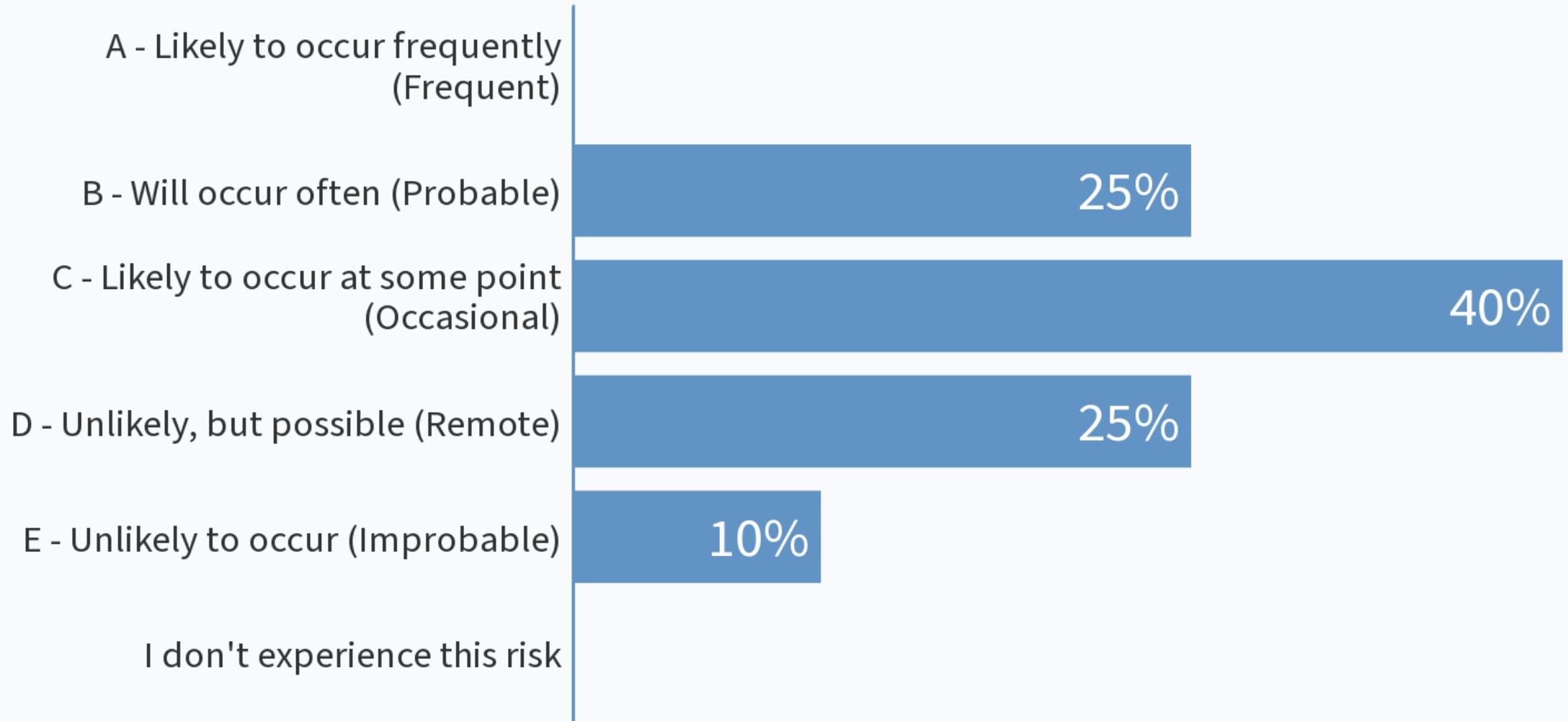
Non-transit vehicle collisions with bus shelters



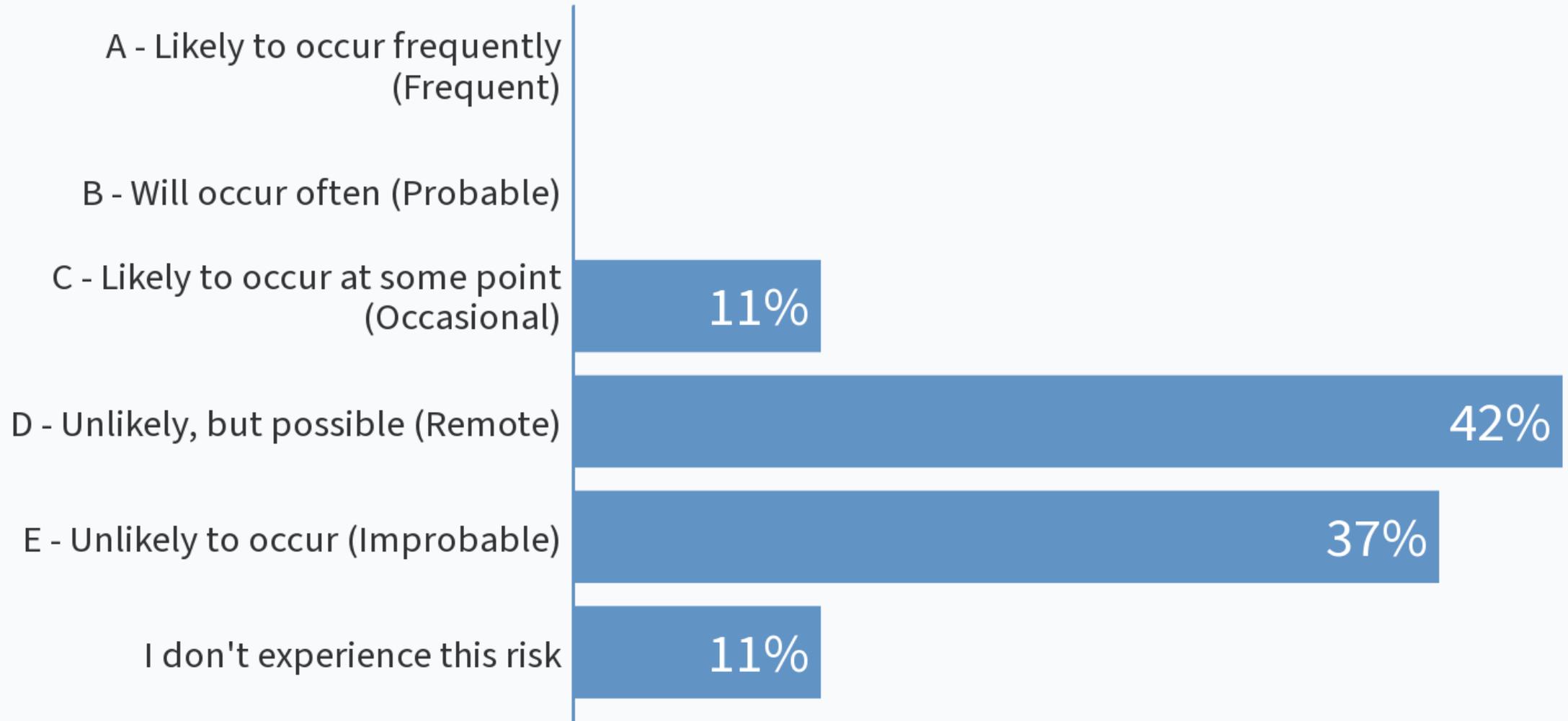
Lack of system to track vehicle repairs and failures



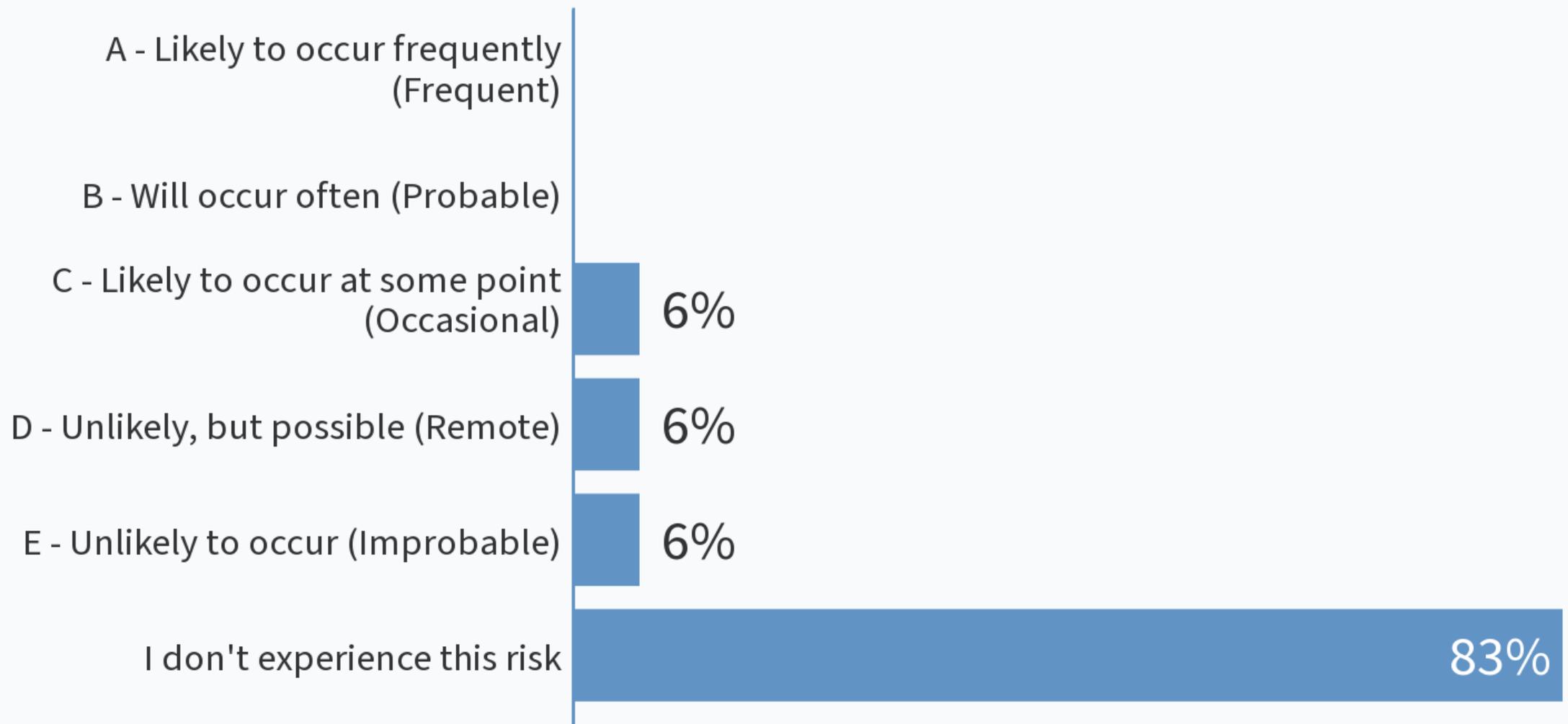
Equipment failures



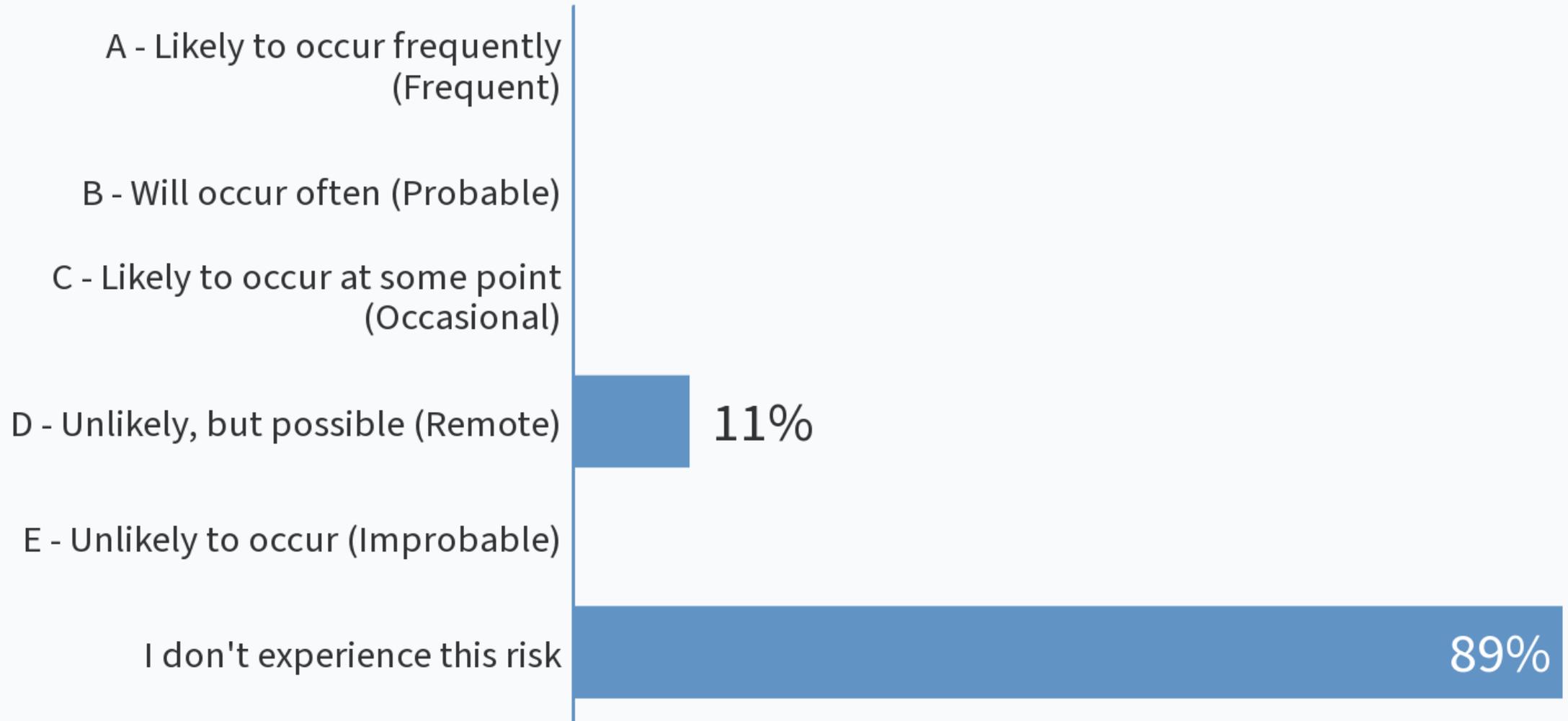
Computer hacks



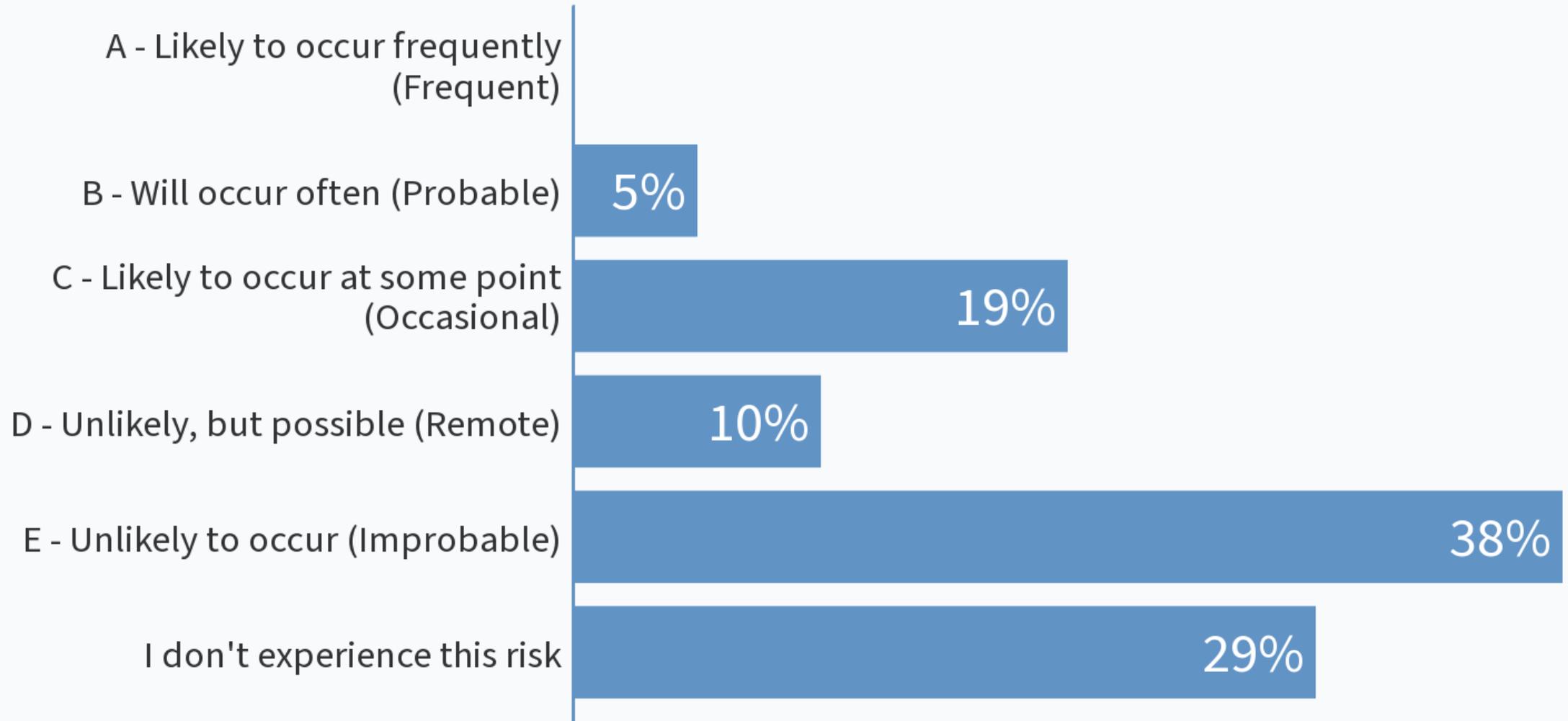
GenFare computer system failures



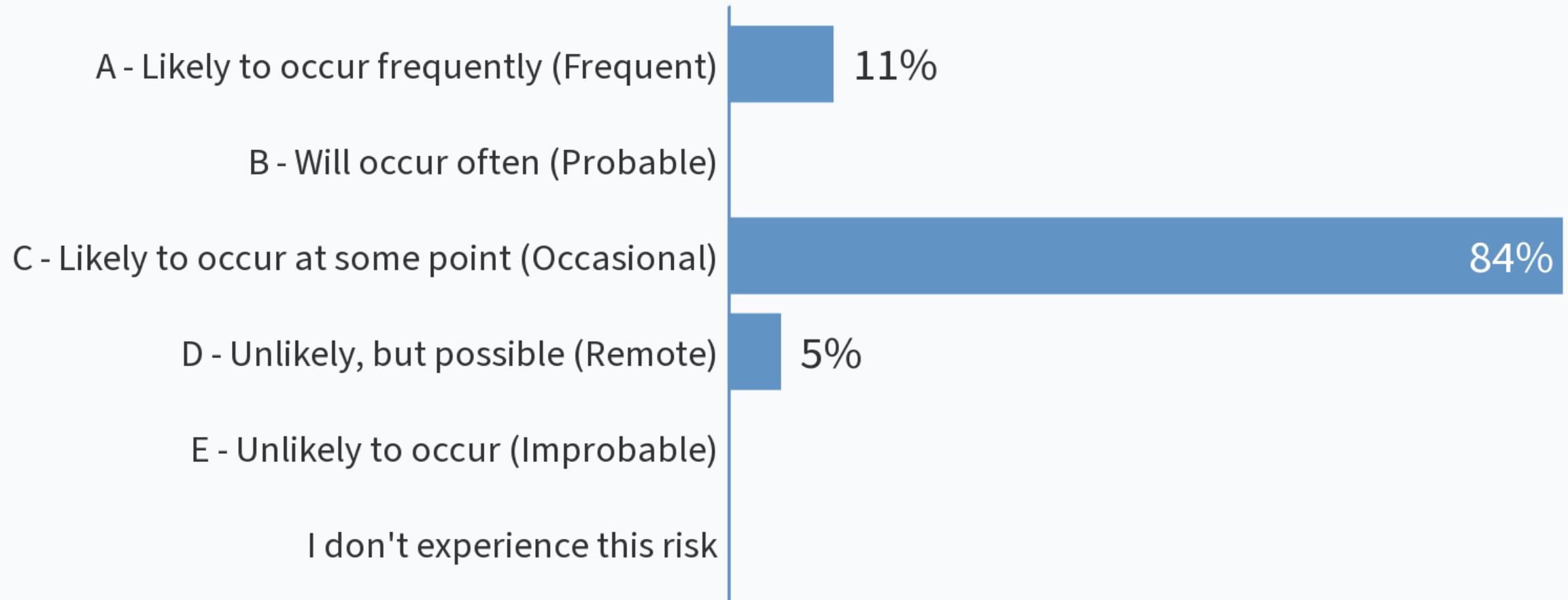
Electric bus fires



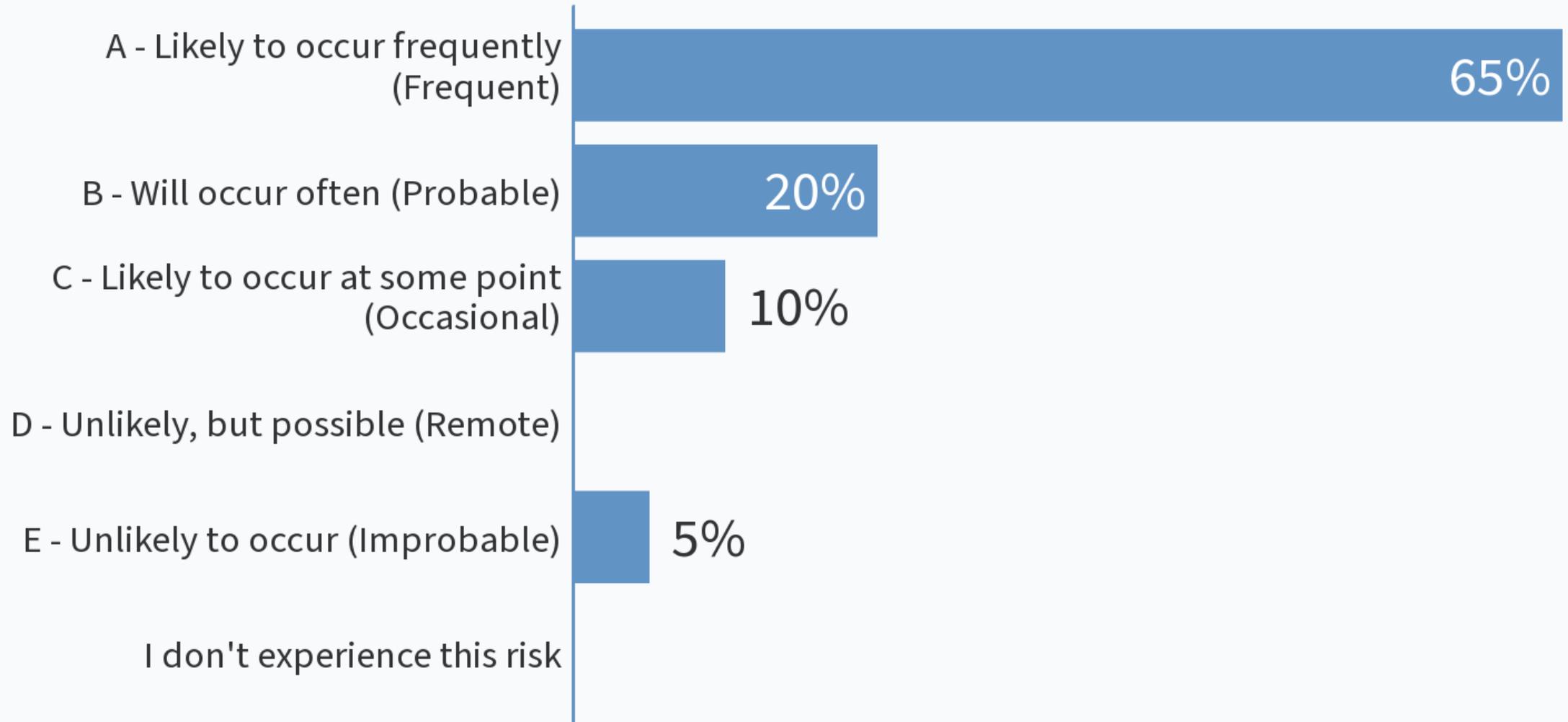
Bus vandalism



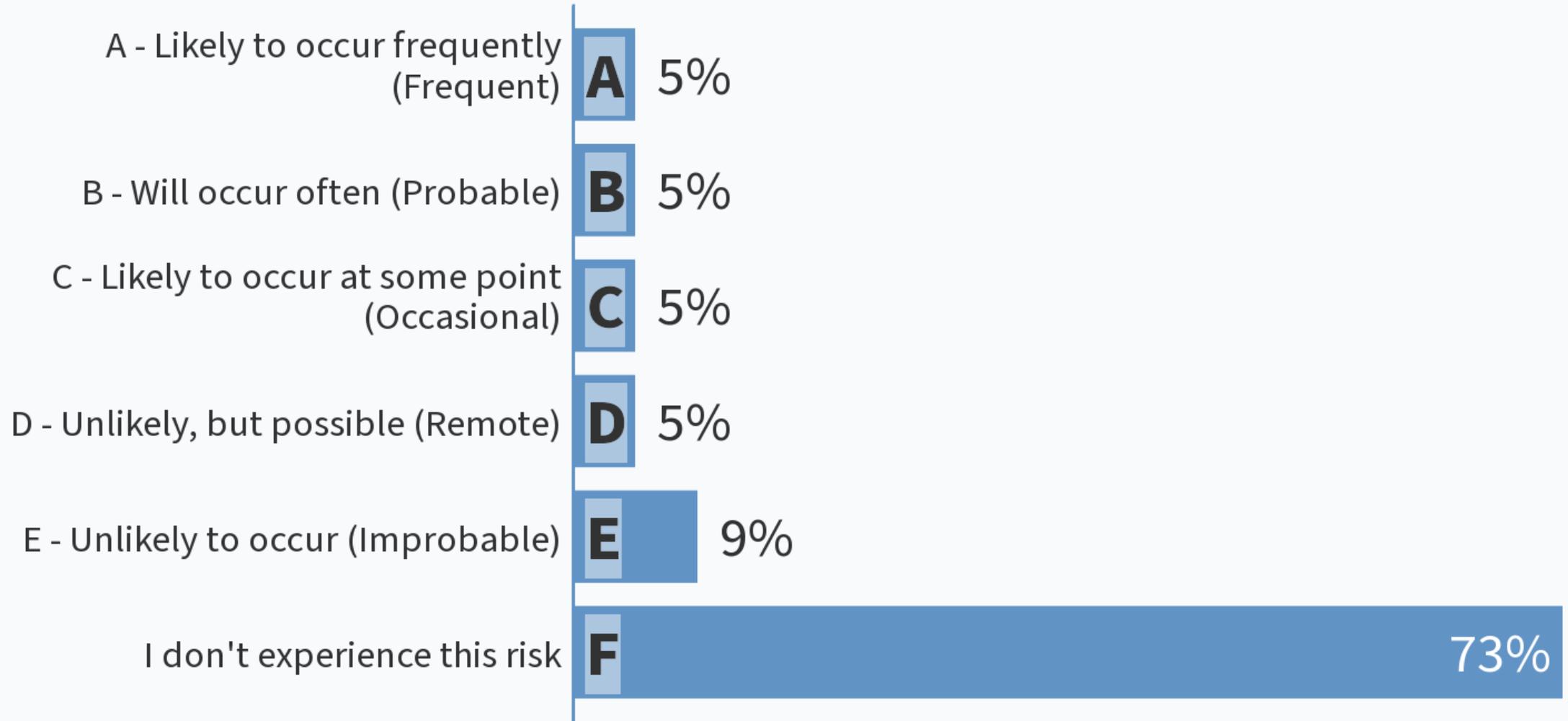
Severe weather impacts on fixed route and paratransit services



Driver shortages and excessive overtime



Shared bays



Brainstorming New Asset Risks

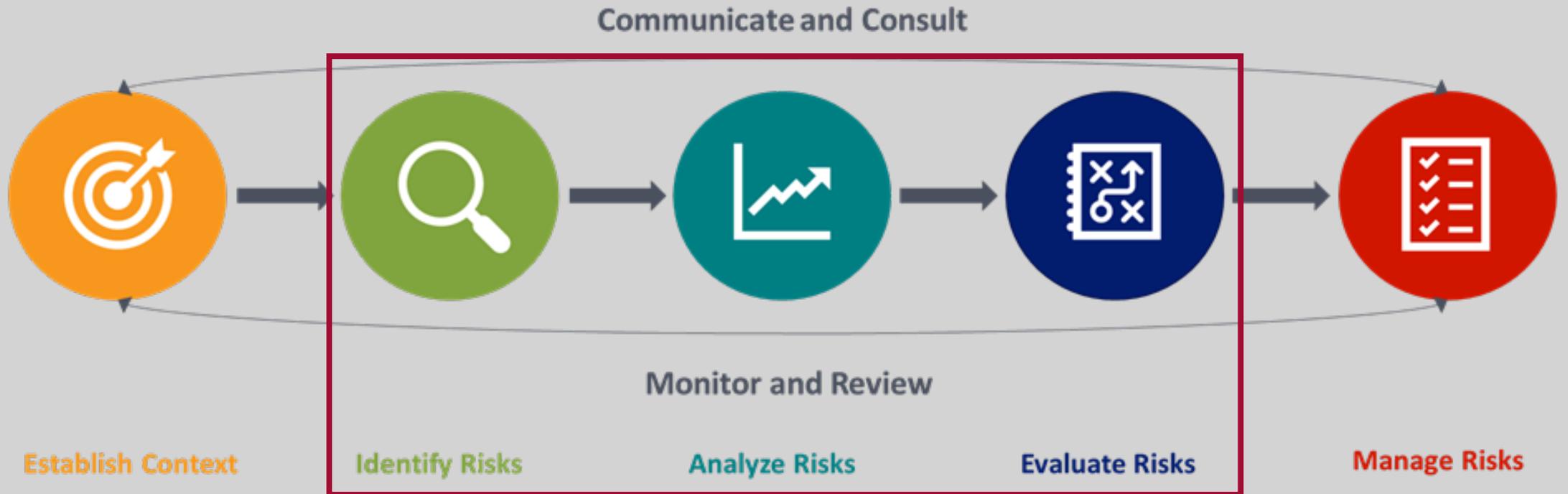
- Think-Pair-Share Activity:
 - 5 minutes independent brainstorming
 - 10 minutes working in groups of 3
 - 15 minutes debrief

Key questions for consideration:
What's the risk? What's likely to happen? What's the impact?

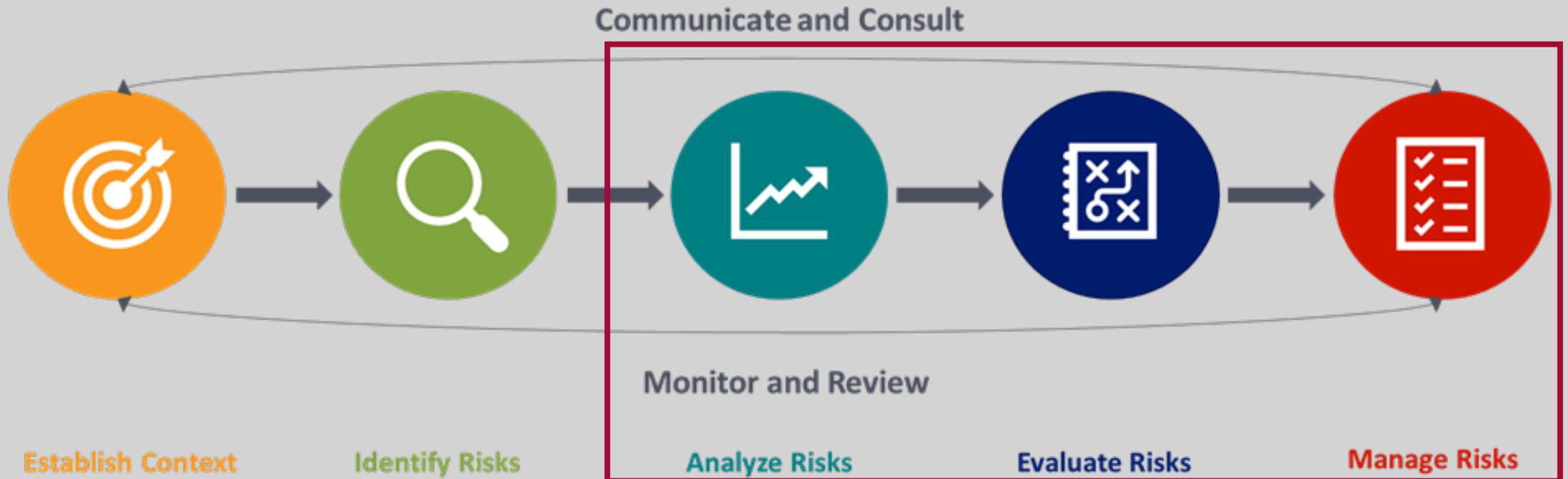
CATEGORY	DEFINITION
Asset Information & Technology	Risks associated with assets and their condition, asset data, and related technology. Examples include aging infrastructure, deferred maintenance impacts, asset data quality, etc.
Financial/ Economic	Risks affecting the financial stability of asset investments or the asset management program. Examples include lack of funding, economic disruptions, etc.
External/Legal	Risks related to external factors that are not easily controlled or failure to comply with standards, policies, etc. and the impact of changes in legal requirements.
Human Resources	Risks related to changing resource needs or internal stakeholder expectations.
Operational	Risks directly related to the ability to provide transit service operation

Wrap Up & Next Steps

What Have We Accomplished Today?



What Is Left To Do?



Next Steps on Risk

- Send all completed worksheets to Jason.Traylor@wsp.com by **COB on February 16th 2022**

Follow up survey to provide consequence ratings and mitigation suggestions (now)



Discussion on using the risk register in business operations (later this year)



Incorporating risk management in decision making and project selection (even later this year)

Annual Asset Management Timeline

