SOFTWARE ENGINEERING ISSUES IN RDBMS

A PRELIMINARY SURVEY

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▸ **Context and participants of the survey**
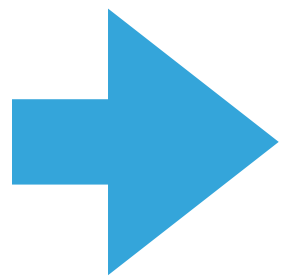
▸ **Results**

▸ **Conclusion**

OBSERVATIONS

▸ RDBMS are holding data but not only…

▸ Views, stored procedures, triggers, … are example of **behavioural** entities.

▸ **Apply Software engineering methods** on RDBMS entities makes sense then.

MY PHD

▸ Develop tools/techniques to help DBAs during DB implementation and evolution:

    ▸ Find quality defects in DB schemas

    ▸ Apply modifications automatically or semi-automatically on DB schemas

    ▸ Impact Analysis inside DB and on client applications

    ▸ Re-architect DB schemas

SHORT TERM GOALS

▸ Provide a coarse-grained estimation of the usage of views, stored procedures and triggers

▸ Get feedback of implementation issues encountered by DBAs

➡ The preliminary survey aims to help us to understand DBAs issues

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CONTEXT AND PARTICIPANTS

▸ Non-official PostgreSQL community meeting @ Lille

▸ About 50 participants

▸ No compensation provided in exchange to participation

▸ 12 people accepted to answer the survey

SURVEY'S DESCRIPTION

▸ 12 questions about usage of views, stored procedures and triggers grouped in 3 groups of 4 questions:

1. What is the proportion of your databases that contain **X**?

2. How many **X** do they hold compared to the number of tables?

3. Are your new databases using **X**? Else, why?

4. Do you encounter problems while implementing **X**? If so, what problems?

With **X** being one of the words: "views", "stored procedures" or "triggers"

SURVEY'S DESCRIPTION

▸ 4 questions concerning personal information:

1. In which company are you working? Or in which open-source project?

2. What is your position?

3. How long have you been in this position?

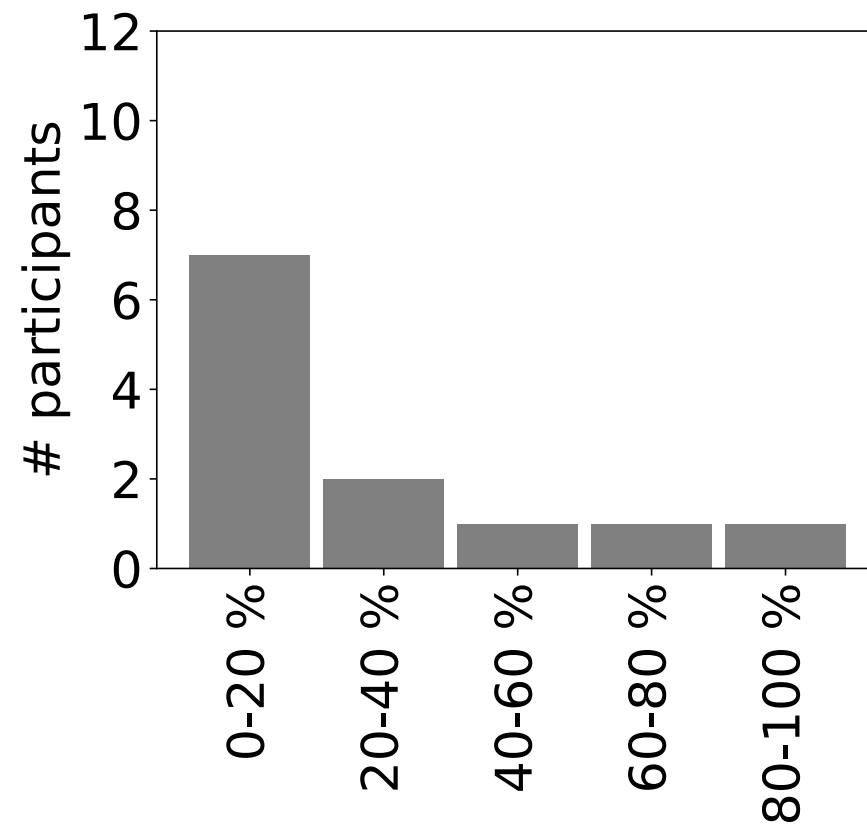4. How many years of experience do you have with PostgreSQL?

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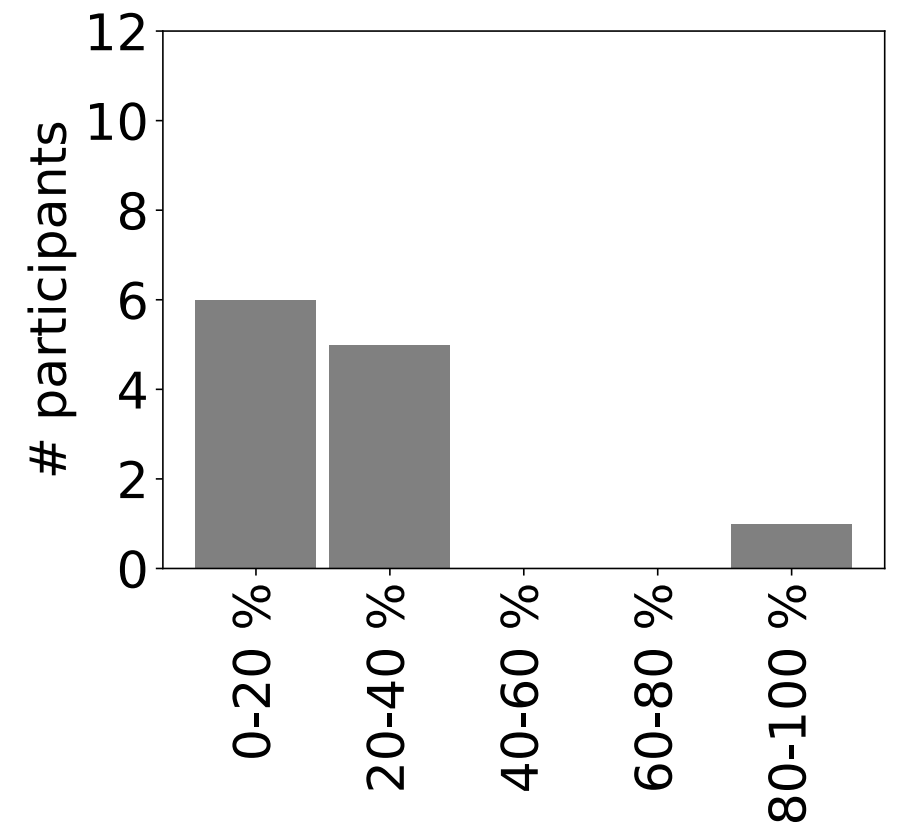
▸ **Results**

▸ **Conclusion**

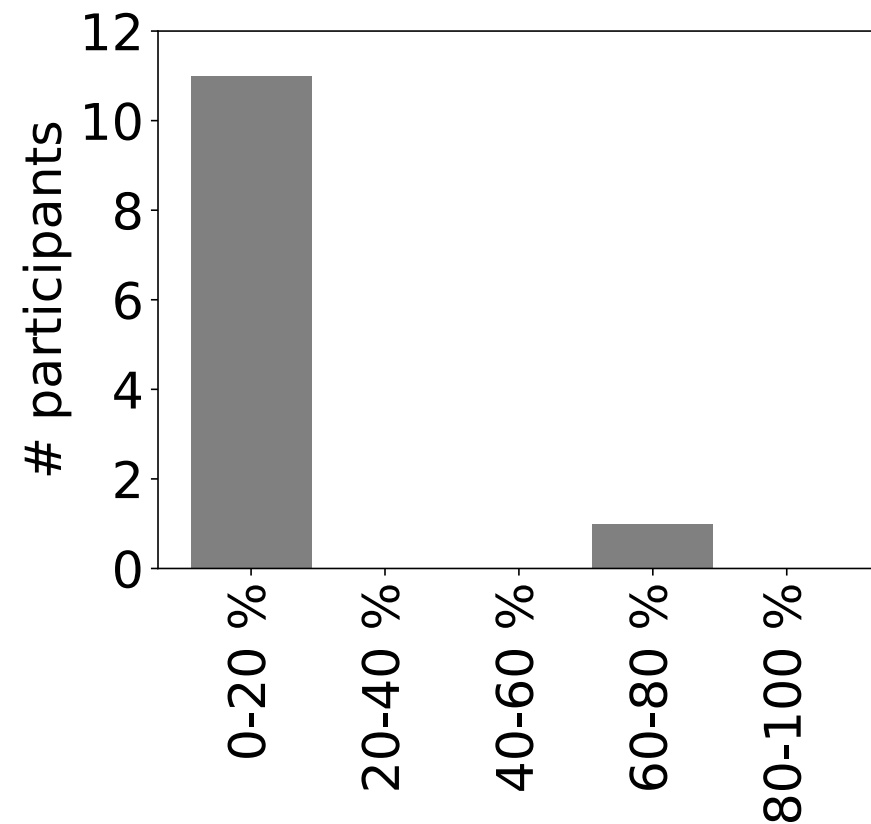# PERCEPTION OF THE PROPORTION OF DATABASES USING X
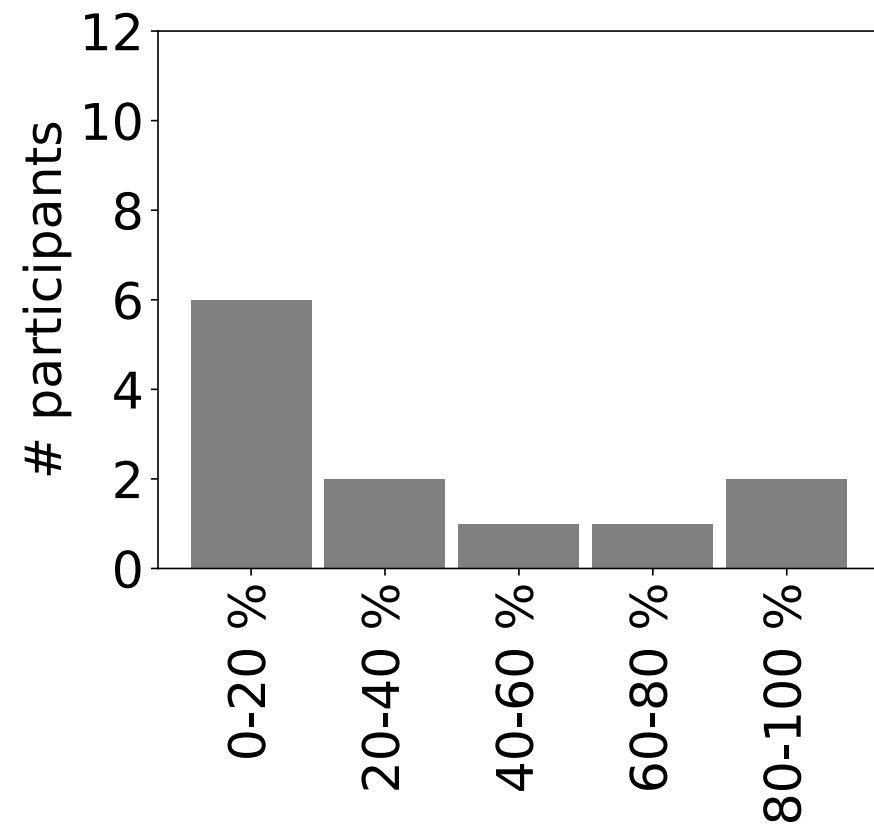
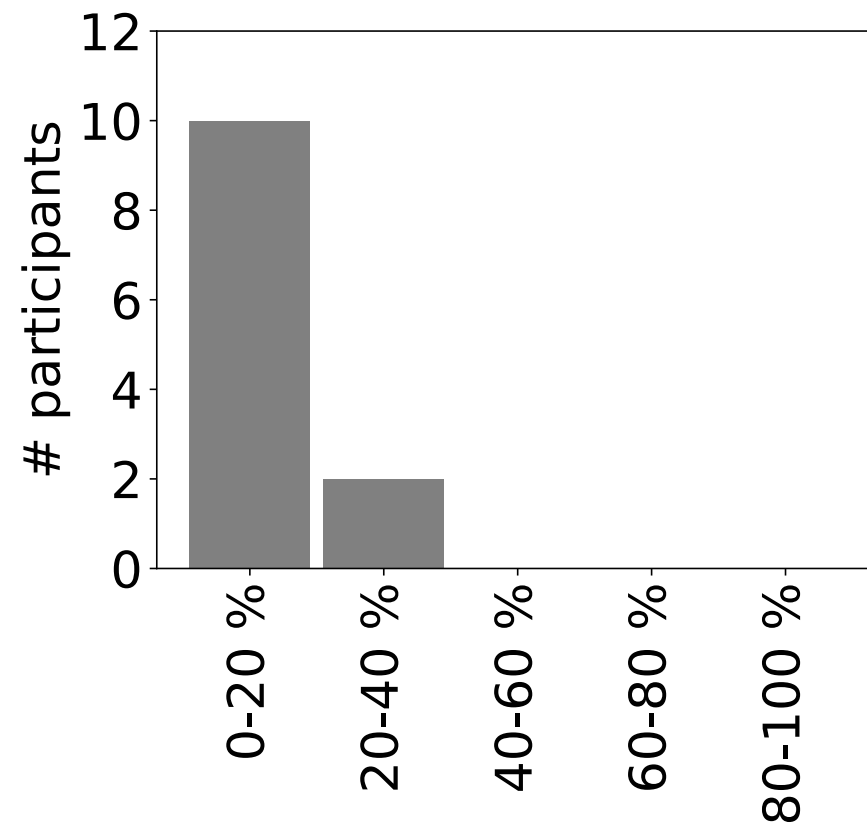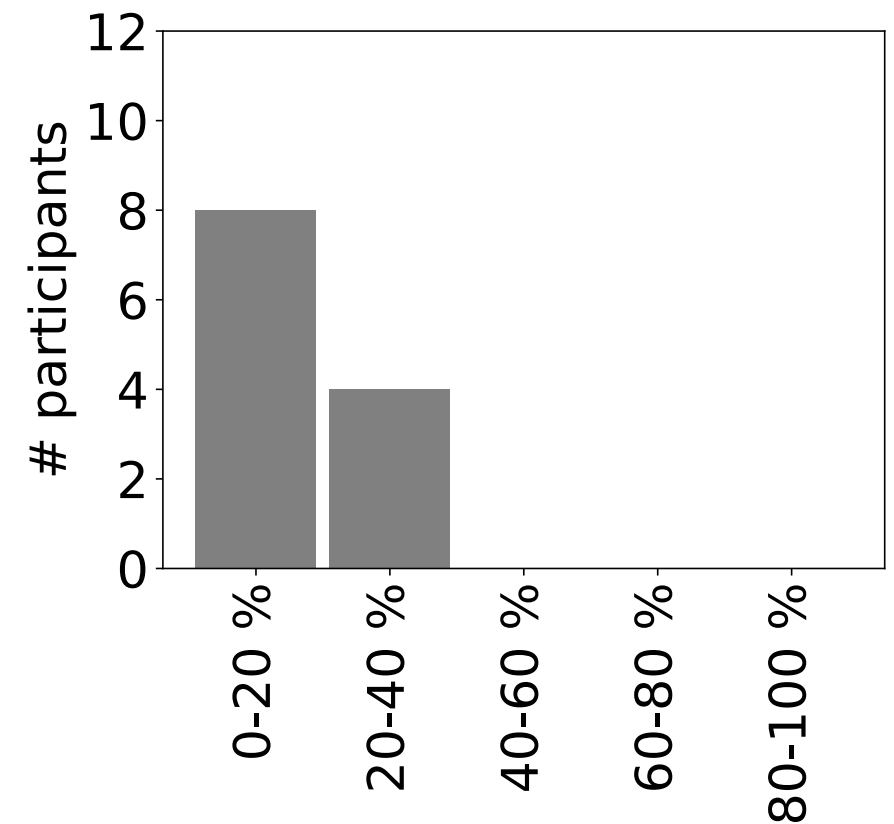

Views

Stored procedures

Triggers

PERCEPTION OF THE PROPORTION OF X IN DATABASES RELATIVELY TO THE NUMBER OF TABLES
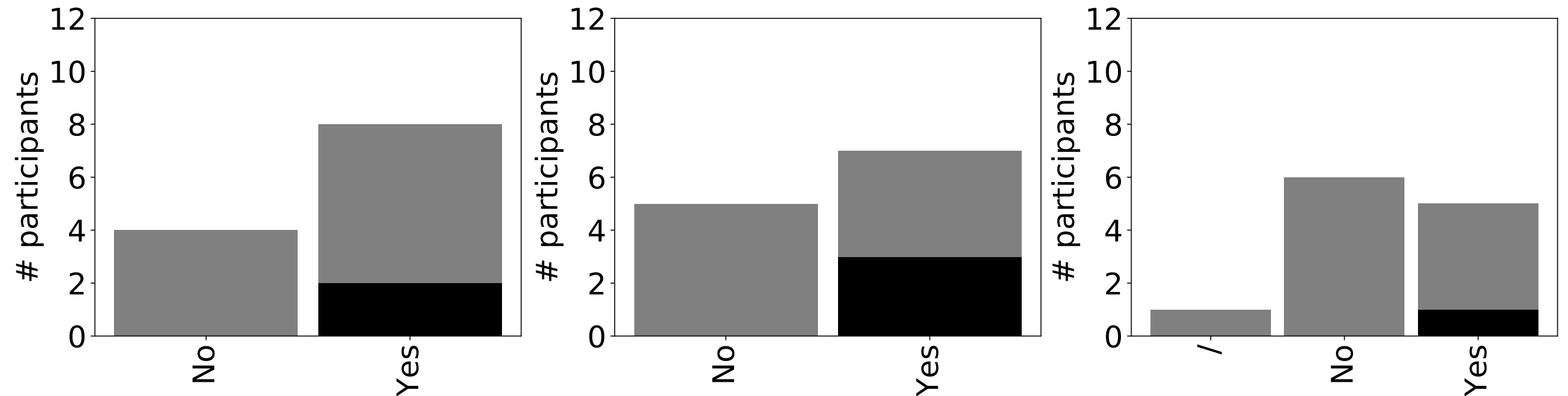

Views

Stored procedures

Triggers

PERCEPTION OF THE USAGE OR NOT OF X IN NEW DATABASES

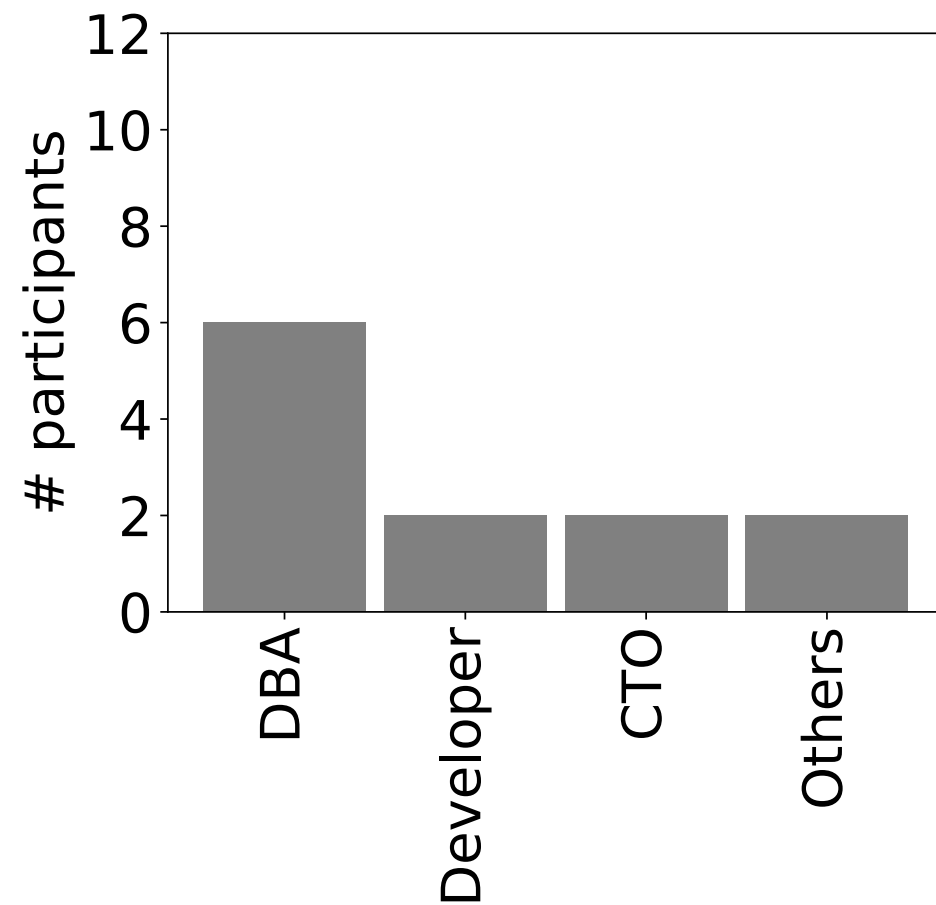The **black** part of the "Yes" represents interviewees having problems

Views   Stored procedures   Triggers

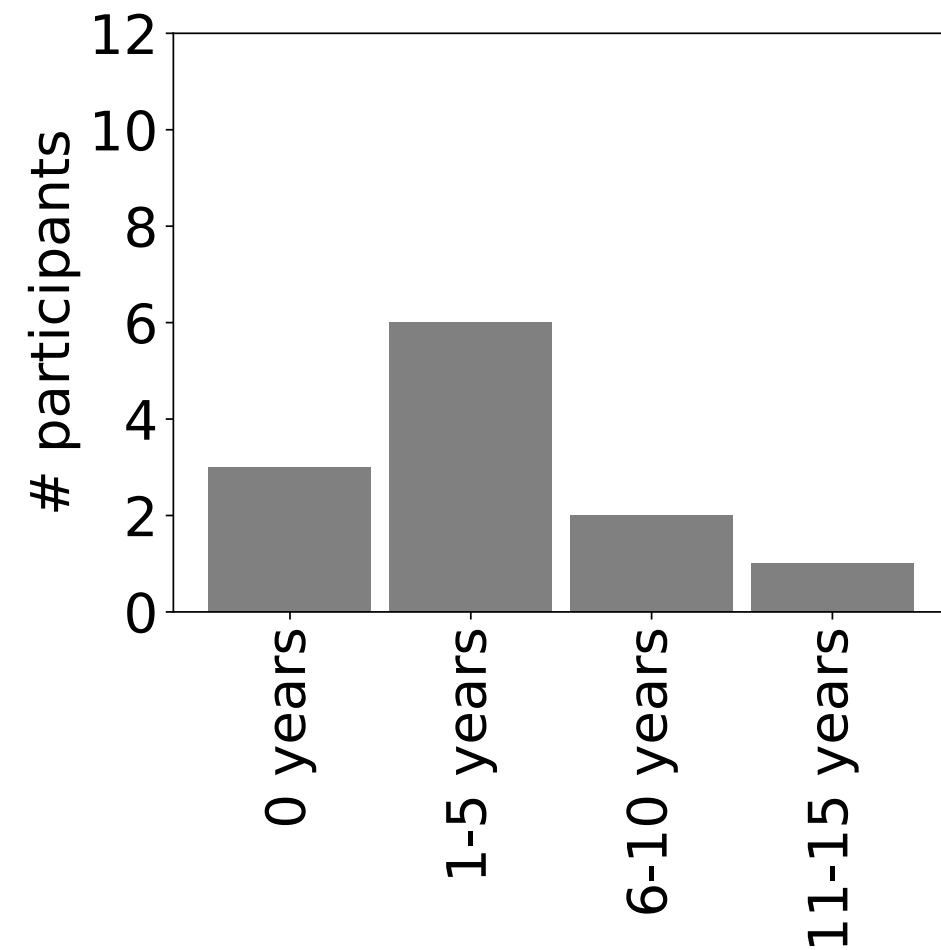# PROBLEMS REPORTED

▸ ''Problem when altering a table used by a view''

▸ ''Programming language complexity''

▸ ''Maintenance complicated''

▸ ''Maintainability problems''

INTERVIEWEES' PROFILES

Interviewees' jobs

Experience with PostgreSQL

THREATS TO VALIDITY

▸ Survey based on interviewees' perceptions

▸ Proposed percentage intervals provide poor precision

▸ Better ways to interrogates people about implementation could be used

▸ Small sample of interviewees

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CONCLUSION

▸ Views, stored procedures and triggers are used in ~ 50% of interviewees' new databases

▸ 7/12 people use stored procedures and 3 of them have problems during the implementation

  ▸ "Programming language complexity"

  ▸ "Maintenance complicated''

FUTURE WORK

▸ Review of the literature around reported issues

▸ Greater scale study

▸ Empirical study of the usage of RDBMS

▸ Gathering more issues

▸ Evaluating quantitatively the extent of these issues

HOW CAN YOU HELP ME?

▸ Talk about this project with people working on database systems.

▸ Send them my PhD webpage where it is possible to help by

  ▸ Sending a data-less SQL schema dump

  ▸ Answering small surveys

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