

# Survey on System Administrators' Experiences at Work

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## 1. Key Findings

This first section is intended as a brief overview of key takeaways from the survey. More detailed information can be found in the following sections. The following data are based on the answers of 262 participants; of those 32 were female, 215 were male.

### Daily Work:

- 71% of participants reported that their personal moral compass was relevant to their work.
- 52% of participants chose solving technical problems as their favorite task at work, 24% chose system maintenance and 16% chose helping colleagues.
- 31% of participants chose first level support as their least favorite task, 24% chose business tasks such as purchasing software or managing inventory and 14% chose system maintenance.
- 70% of participants (strongly) agreed<sup>1</sup> that they were satisfied with their job, 79% (strongly) agreed they were satisfied with their career choice; 39% reported that there were no promotion opportunities for them.

### Workplace Hierarchies and Stereotypes by Gender:

- 57% of male and 31% of female participants (strongly) agreed that they felt comfortable giving orders.
- 72% of male and 56% of female participants (strongly) agreed that they felt comfortable receiving orders.
- 71% of male participants with sysadmin coworkers (strongly) agreed that they had skills that no one else at their workplace had. 43% of female participants with sysadmin coworkers felt the same.
- 50% of female participants and 32% of male participants (strongly) agreed that they had faced negative stereotypes about themselves at work.

### Logging, Oversight, Dynamic Privileges:

- 73% of participants administer systems or parts of systems alone.
- 30% of participants wished for more oversight, 8% wished for less.
- 83% (strongly) agreed that logging was necessary, 69% (strongly) agreed that they were comfortable with their activity being logged, 67% (strongly) disagreed<sup>2</sup> that logging implied a lack of trust.
- 80% of participants (strongly) agreed that dynamic privileges were necessary.

### Power at Workplace

- 44% of participants (strongly) agreed that they were in a powerful position.
- 85% of participants reported that their position could be used to damage their employer financially, another 85% indicated their position could be used to access insider knowledge about their employer and 88% of participants' position could be used to do reputational damage to their employer.
- 69% reported their position could be used to access insider information about customers, 66% about coworkers.
- Of the 30% of participants who reported not being in a powerful position, 63% held a position that could damage their employer financially, 69% reputationally and 59% of their positions could access insider knowledge.

### Social Support by Gender

- A higher percentage of male participants received support from their family (parents, siblings, grandparents) and from teachers than female participants.
- A higher percentage of female participants received support from friends and partners than male participants.
- 16% of female participants were discouraged by teachers.

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<sup>1</sup> responded with either agree or strongly agree

<sup>2</sup> responded with either disagree or strongly disagree

## 2. Employment Information

Most participants were employees (92%), some freelancers (3%) and some self-employed (2%). About 10% of participants reported themselves to be students at a college or university. Most participants (90%) were working full-time, 8% reported working part-time. Participants had been working as system administrators for a median of 14 years. 61% of participants reported doing tasks that do not fall into the realm of system administration.

Of the 95 participants who indicated that they had children, 49 (52%) reported that it had not had an impact on their work, 33 (35%) replied that they now worked fewer hours and 13 (14%) stated that they worked longer hours.

Regarding overtime, about 58% of participants (strongly) agreed that they often worked overtime. About 31% of participants (strongly) agreed that they often worked overtime and at the same time (strongly) disagreed that they were paid for all their overtime (see Figure 1).

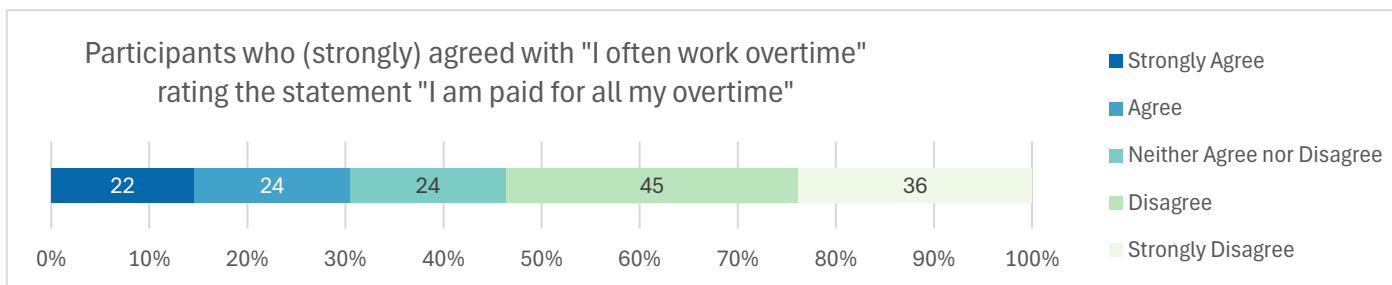


Figure 1: Participants who (strongly) agreed with the statement "I often work overtime" (n=71) were asked their agreement with the statement "I am paid for all my overtime."

48% of participants (strongly) agreed with the statement that their salary was adequate for the work they did, 23% neither agreed nor disagreed, 23% disagreed and 6% strongly disagreed. About 66% of participants (strongly) agreed that their salary was enough for them to afford a comfortable lifestyle. About 21% of participants disagreed with this statement while 1% strongly disagreed.

When comparing their salary to the people around them, almost half the participants (48%) reported their salary as higher than that of others in their family, as well as 29% who reported the same for their friends, and almost a fifth (19%) for their coworkers (see Figure 2). 43% of participants earned as much as their coworkers.

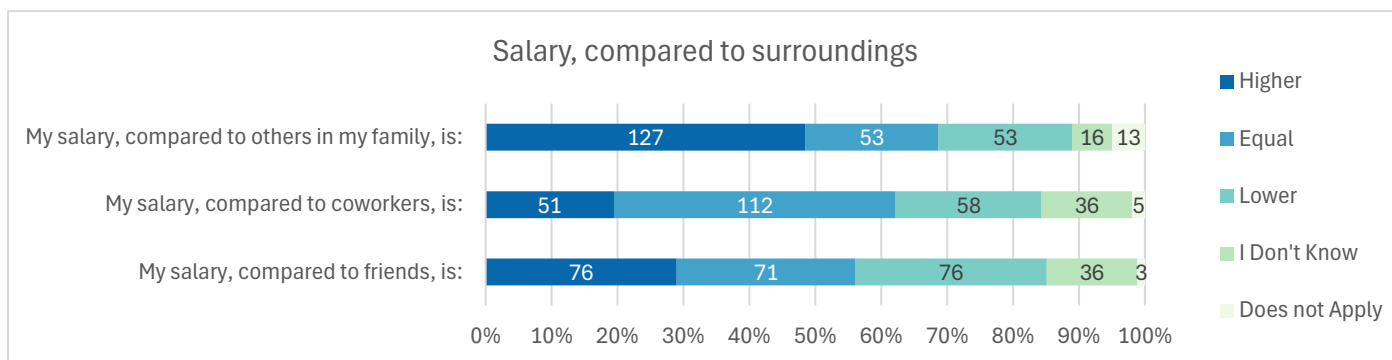


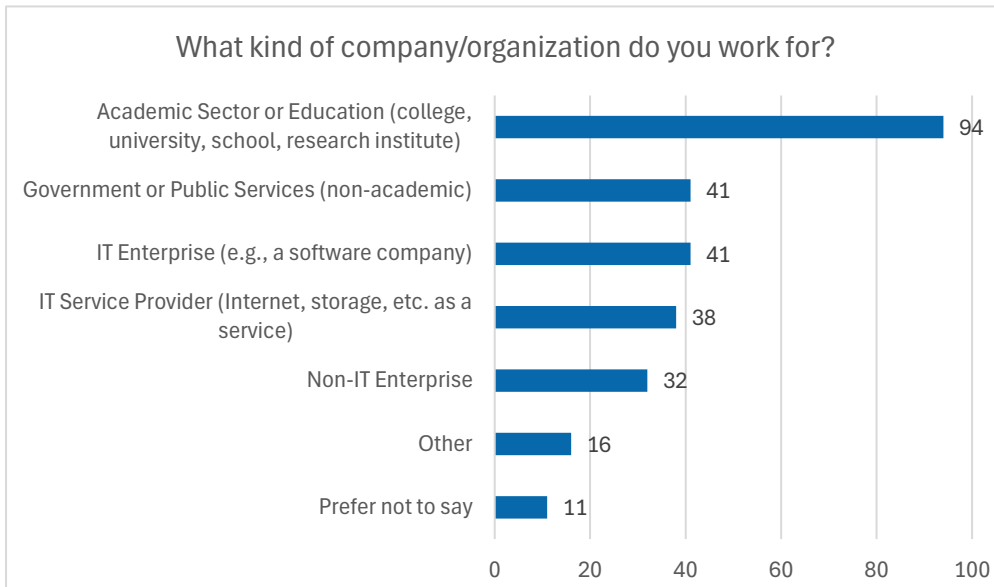
Figure 2: Participants' salary compared to their surroundings. (n=262)

Participants were then asked about the composition of the groups they worked in. Groups were split by sysadmins and non-sysadmins, as well as by gender (male, female, other). 16 participants who answered this question inconsistently were omitted. The median group size was 11 people.

63% of participants worked in groups with non-sysadmins. About 10% of participants reported being the only sysadmin in their group. Regarding gender, 49% of groups had no female sysadmins, about 23% had one and another 22% had more than one female sysadmin. 2% of groups had no male sysadmins.

### 3. Company Details

The following section concerns information gathered on the companies and organizations participants work for. These questions were only shown to the 247 participants who reported their employment situation as either employed or self-employed with employees.



These participants had been with their current organization for a median of 7 years. Participants were then asked to select the kind of company or organization they work for (see Figure 3).

Participants were then asked whether their company or organization was part of their country's critical infrastructure. 23% responded in the affirmative, 69% in the negative, 5% didn't know and 3% preferred not to say.

Figure 3: Chart showing the areas of the companies participants work for (n=247).

### 4. Daily Work

In order to understand participants' daily work life, they were asked whether they performed tasks in a number of different fields. Participants were able to select as many of these tasks as they preferred.

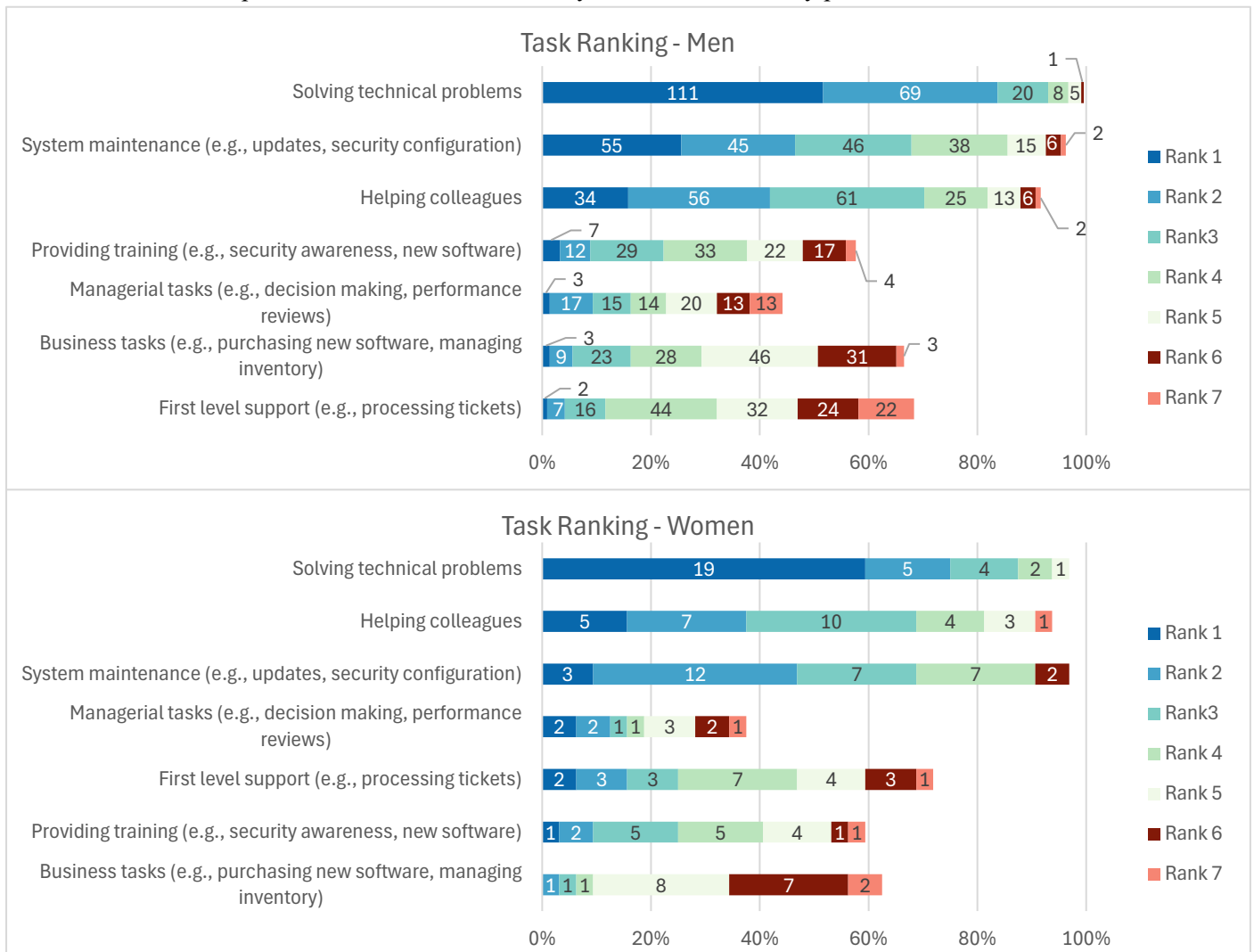


Figure 4: Tasks by how they were ranked by male (n=215) and female (n=32) participants. Tasks are ordered by how often they were chosen as favorite.

Participants were then asked to rank these tasks by how much they enjoyed them. The results of this ranking – split by gender – can be seen in Figure 4. The frequency of certain tasks being chosen as favorites differed between male and female participants. While both chose “solving technical problems” as their favorite task most frequently, women chose “helping colleagues” more often than “system maintenance,” men did the reverse.

Participants were then asked to evaluate a set of statements regarding their daily work experiences. These statements alongside participants’ responses can be seen in Figure 5.

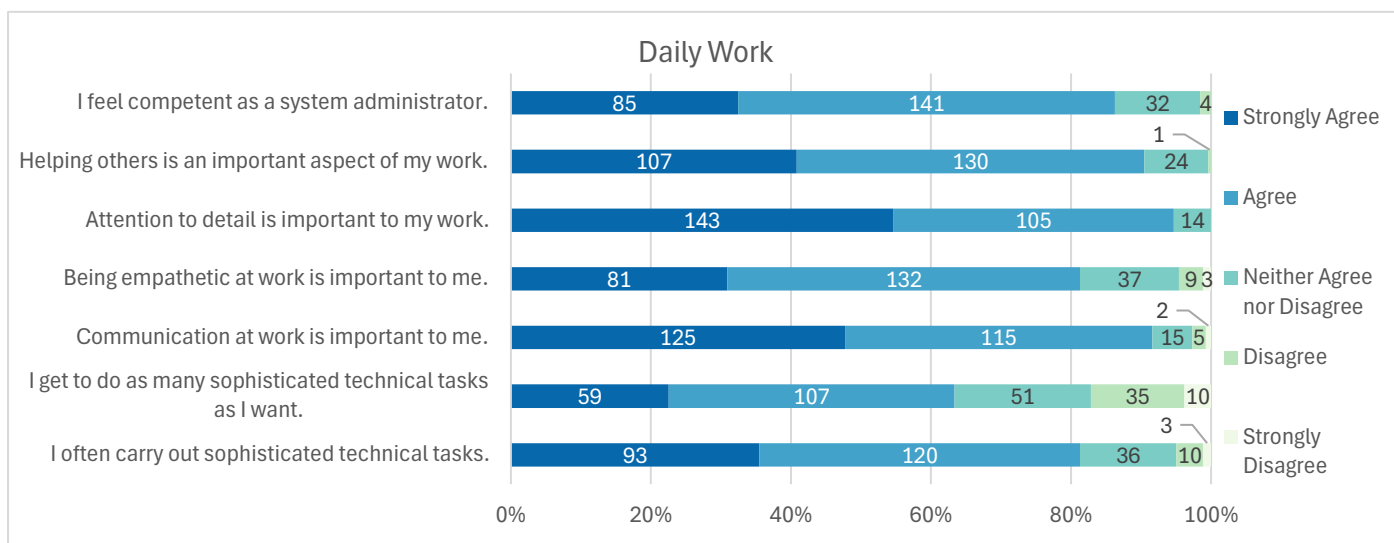


Figure 5: Participants' agreement with statements regarding their daily work (n=262).

Notable here is that no participant strongly disagreed with the statements “Helping others is an important aspect of my work” and “I feel competent as a system administrator”. Further, no participant (strongly) disagreed with the statement “Attention to detail is important to my work”. More than 80% of participants (strongly) agreed that being empathetic was important to their work.

## 5. Job Satisfaction

Participants were asked to evaluate a number of statements aimed at judging their job satisfaction. About 70% of participants (strongly) agreed that they were satisfied with their job. 79% of participants (strongly) agreed that they were satisfied with their career choice.

31% of participants (strongly) agreed that they had promotion opportunities while 39% (strongly) disagreed. 37% of participants were dissatisfied with their promotion opportunities.

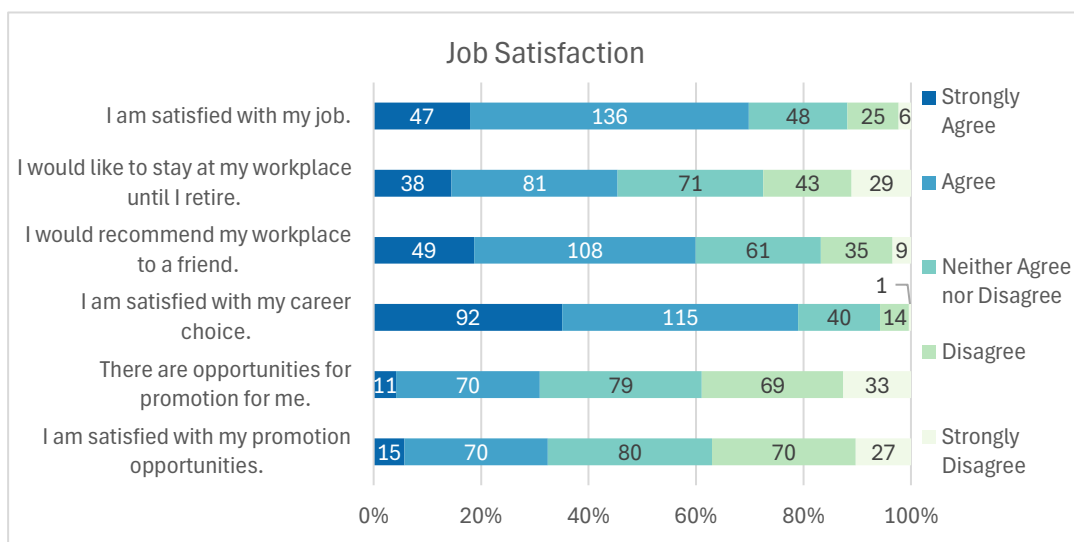


Figure 6: Participants' agreement with statements regarding job satisfaction (n=262).

The sector with most participants (strongly) agreeing that they were satisfied with their job is non-IT enterprises. The sector with the highest career satisfaction is IT enterprises.

## 6. Moral and Ethical Concerns

To arrive at an understanding of participants’ experiences with moral and ethical questions in system administration, they were first asked about guidelines their workplace had put in place. About 81% of participants reported that their workplace had guidelines for data privacy and security, while 46% of participants stated that their workplaces had ethics

guidelines. 71% of participants (strongly) agreed that their personal moral compass was relevant to their work and 45% of participants (strongly) agreed with the statement that they faced moral or ethical questions at work. 26% indicated a familiarity with USENIX “The System Administrators’ Code of Ethics.”

## 7. Oversight and Logging

Regarding oversight, about 73% of participants reported that there were systems or parts of systems they administered alone. More than half of the participants (51%) (strongly) agreed that they regularly checked the work of other people. 32% (strongly) agreed that their own work was regularly checked by others (see Figure 7).

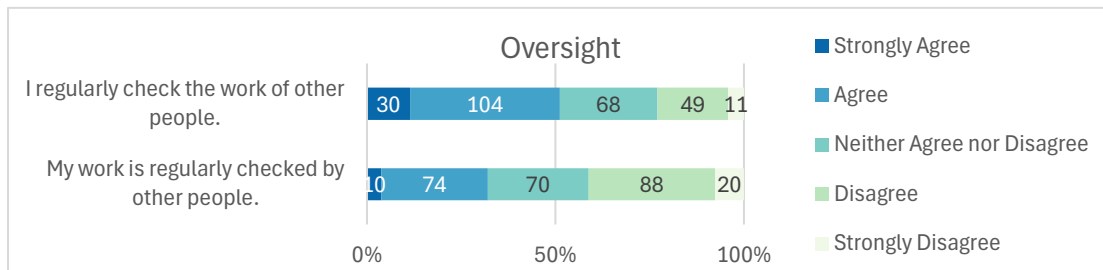


Figure 7: Participants' agreement with statements concerning oversight (n=262).

Participants were then explicitly asked about the amount of oversight they experienced. 46% of respondents reported that they were satisfied with the amount of

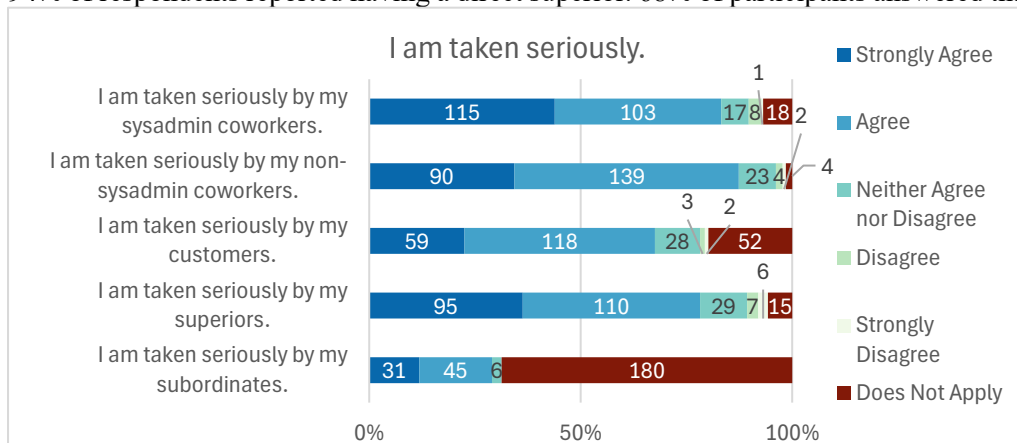
oversight there was over their position, 8% indicated there was too much oversight and 30% wished for more oversight. Considering oversight participants exercise over others, 54% were satisfied with the amount, 19% wished for more oversight and 10% reported that they felt they were exercising too much oversight.

Next, participants were asked about logging. This was defined as to “electronically and automatically track and store a record of the actions of a system administrator”. 83% of participants (strongly) agreed with the statement that logging was necessary. About 69% of respondents (strongly) agreed that they were comfortable with their activities being logged. Finally, 67% of respondents (strongly) disagreed that logging implied a lack of trust while 16% (strongly) agreed. Participants reported a median of 44% of their activity being logged and wished for a median of 70% of their activity to be logged.

Participants were also asked about dynamic privileges, defined as “system privileges that must be requested to perform a certain task and are revoked once the task is completed”. While 63% of participants (strongly) agreed with the statement that dynamic privileges were necessary, 42% (strongly) agreed that they took too much time and effort. About 69% (strongly) disagreed with the idea that dynamic privileges implied a lack of trust, 13% (strongly) agreed. Finally, 67% agreed or strongly agreed that they were comfortable with the use of dynamic privileges. 52 % indicated that their workplace did not use dynamic privileges, 41% reported that theirs did. Of those, 56% indicated that they were satisfied with the number of dynamic privileges used at their workplace, 26% wished for more while 15% desired the opposite. Participants that indicated that their workplace did not use dynamic privileges showed less agreement with the statement that dynamic privileges were necessary (52% as opposed to 80% for participants whose workplace did use them) and more agreement with the idea that they took too much time and effort (50% as opposed to 35%). They also indicated being less comfortable with their use (58% as opposed to 83%).

## 8. Interactions with Coworkers

To gain insight into interactions with coworkers, participants were first asked about hierarchies at their workplace. Here, 94% of respondents reported having a direct superior. 68% of participants answered that they had no direct subordinates



as opposed to 32% who answered that they did have subordinates.

Participants were then asked to evaluate a set of statements regarding whether they felt taken seriously by different

Figure 8: Participants' agreement with statements regarding their perception of their being taken seriously (n=262).

groups. The responses can be seen in Figure 8, please note that only the 247 participants that indicated that they had a direct superior were asked whether they felt taken seriously by that superior and only the 84 participants that replied that they had subordinates were asked about those. For easier reading, participants who were not asked are counted as “does not apply.”

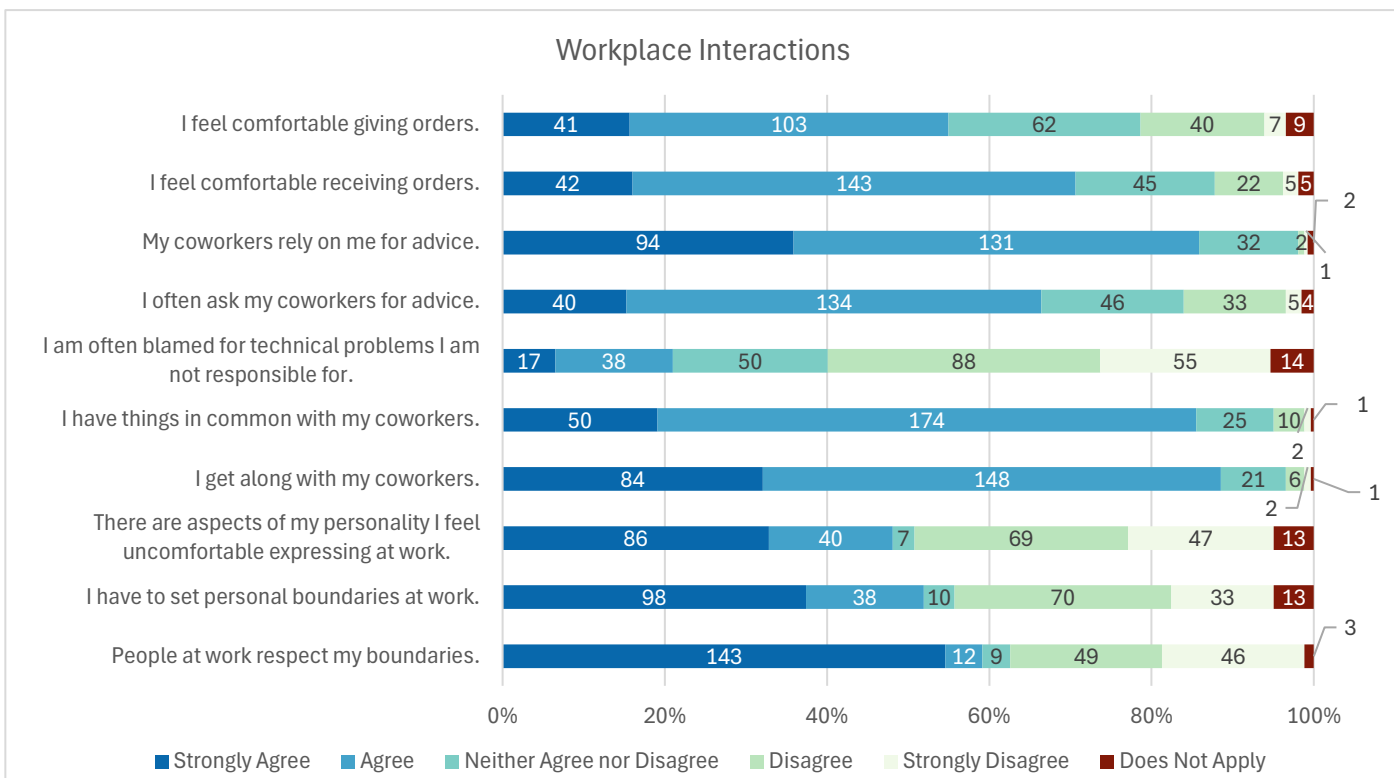


Figure 9: Participants' agreement with statements regarding their workplace interactions. Personal boundaries were explained to participants as “interpersonal limits that you set to make sure you feel comfortable” (n=262).

Participants were then asked to state their agreement with a more general set of statements as can be seen in Figure 9. 86% of participants were relied on for advice and only 21% indicated that they are often blamed for technical problems they are not responsible for. Regarding the first two of these statements, it is worth noting some gender differences. 31% of women indicated agreement with the first statement as opposed to 57% of men. 56% of women agreed with the second statement as opposed to 72% of men (see Figure 10).

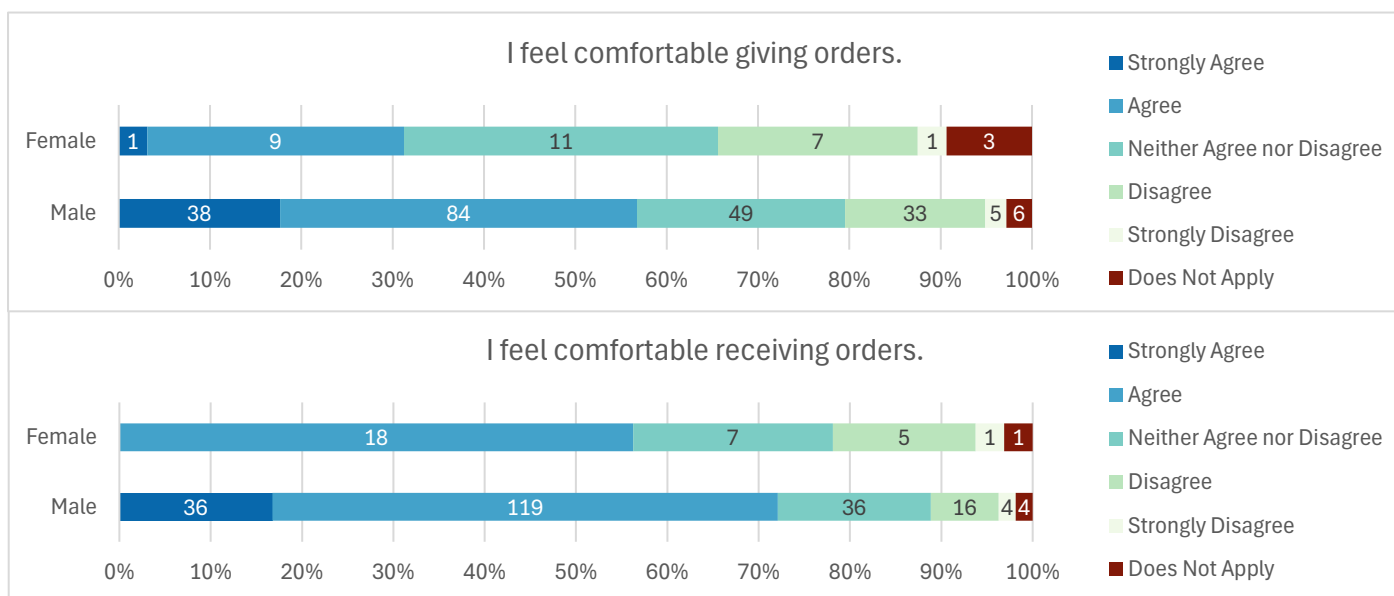


Figure 10: Detailed responses by men (n=215) and women (n=32) to the two statements regarding the giving and receiving of orders.

Finally, participants were asked whether they were familiar with the System Administrator Appreciation Day. 34% of respondents were unfamiliar, 57% were familiar but indicated that it was not celebrated at their workplace and 9% answered that the System Administrators' Appreciation Day was celebrated at their workplace.



## 9. Perception of Power

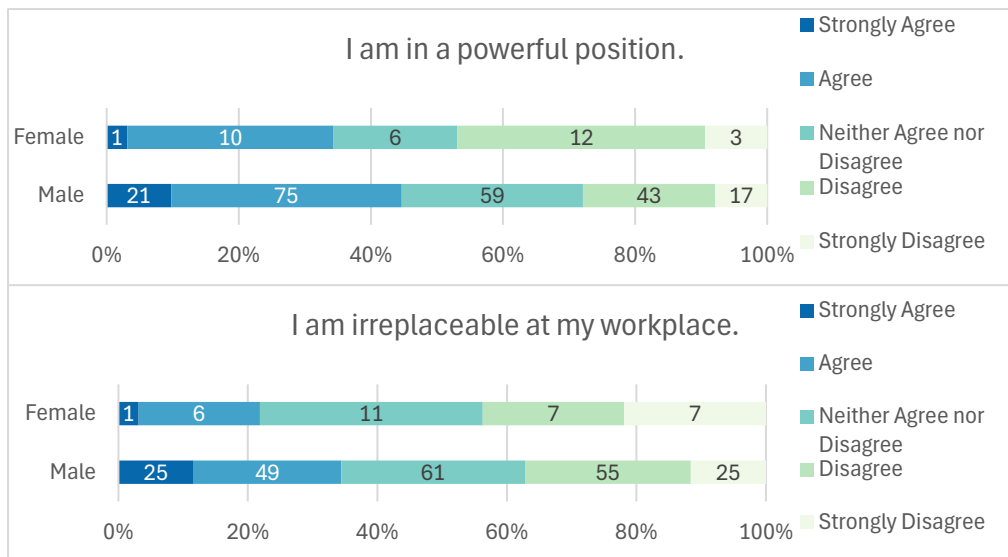


Figure 11: Responses by male (n=215) and female (n=32) participants to statements regarding their power and replaceability.

participants who reported themselves to be the only system administrator in their group were removed. This removed 25 male participants (22 of which strongly agreed and 3 agreed) and 2 female participants. This question showed a notable difference in responses by gender. 71% of male participants (strongly) agreed that they had skills that no one else at their workplace had, even while working with other system administrators. Less than half (43%) of female participants felt the same way.

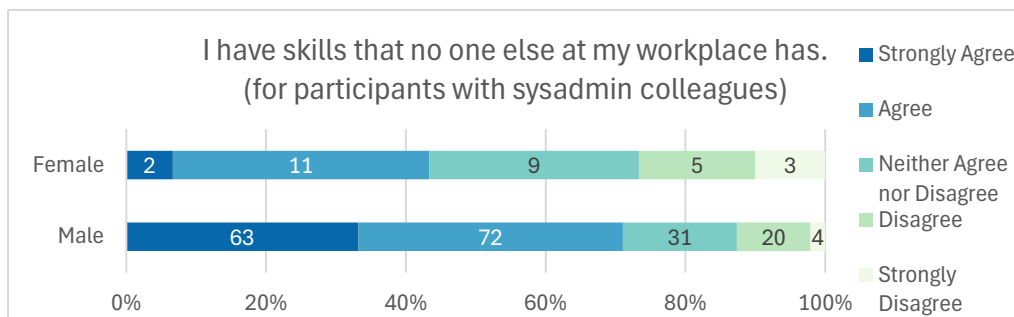


Figure 12: Agreement by participants who indicated that they had sysadmin colleagues (n=220) split into male (n=190) and female (n=30) responses.

reported that someone in their position could access insider knowledge regarding this target and 88% indicated that their position could be used to do reputational damage to this target. Even participants that disagreed or strongly disagreed with the statement that they had a powerful position reported that their position could be used to damage their employer in this way. Of these “powerless” participants, 63% asserted that their position had the ability to do financial damage, 59% reported it could grant access to insider knowledge, and 70% reported it could be used to do reputational damage.

## 10. Stereotypes

Respondents were asked about stereotypes they had encountered at work. Stereotypes were defined as “fixed and oversimplified ideas about character traits or behaviors of people based on their belonging to a certain group or class.” Participants were asked to evaluate statements about their experiences with stereotypes and prejudice (see Figure 13).

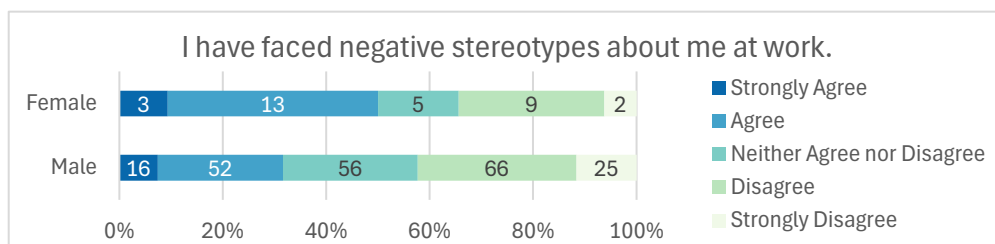


Figure 13: Agreement by male (n=215) and female (n=32) participants with having faced negative stereotypes.

Participants were asked whether they considered themselves to hold a powerful position (see Figure 11). To arrive at a more nuanced understanding of participants’ power, they were also asked whether they considered themselves to be irreplaceable. and whether they had skills no one else at their workplace has.

Participants were then asked whether they had skills no one else at their workplace has (see Figure 12). To ensure meaningful results,

Participants were also asked to estimate the damage someone in their position could do. Here, it seems that the most vulnerable target is the participant’s employer, with 85% of participants reporting that their position could be used to financially damage this target. Another 85%

As there were some gender differences, some statements are shown in more detail in Figure 14. 53% of female respondents showed agreement with the assertion that they had thought about altering their behavior to be seen as more

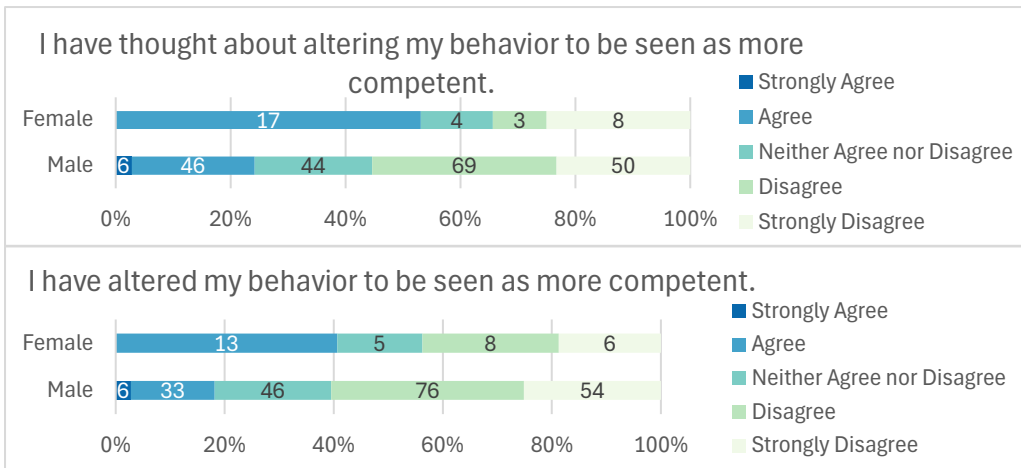


Figure 14: Male (n=215) and female (n=32) participants' agreement with having thought about changing their behavior and having changed their behavior to be seen as more competent by gender.

competent, as opposed to 24% of men. Female participants also indicated more agreement with the follow-up statement “I have altered my behavior to be seen as more competent.” Here 41% of women agreed as opposed to 18% of men.

## 11. Social Support

Participants were then asked about their social support. The first question here concerned support groups they were part of or would like to have access to. Support groups were defined as “groups that support [them] in both technical and non-technical aspects of [their] job. Examples would be a support group for a specific software, for female Linux users or queer sysadmins.” 30% of respondents indicated that they were part of one or multiple support groups, 19% responded that they were not interested, 45% never considered it and 5% would have liked to be in a support group but didn’t have access.

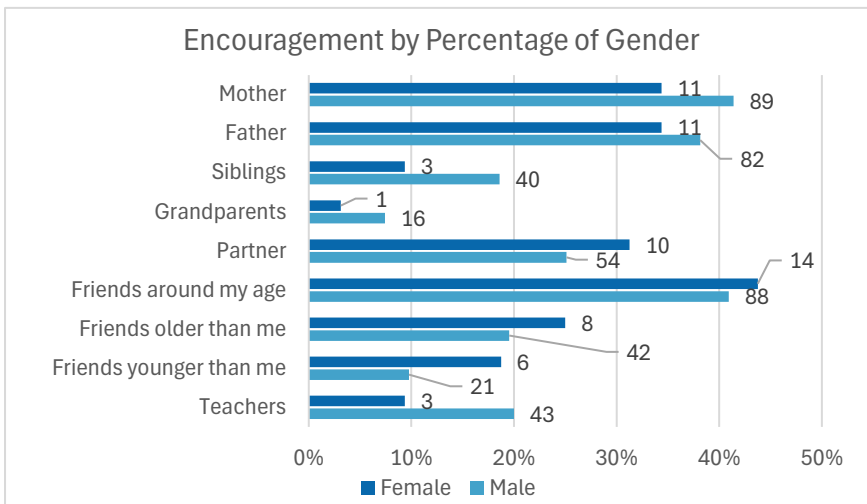


Figure 15: Male (n=150) and female (n= 22) participants, who were encouraged in their career choice, were encouraged by these parties.

Next, respondents were asked about people who supported or discouraged them in their career choice of system administration. 180 participants reported that they had received support. Male and female participants’ selections can be seen in Figure 15. Participants were able to select multiple sources. Results are presented as percentages of all male or female participants, respectively. A higher percentage of male participants received support from their family (parents, siblings, grandparents) and from teachers than female participants, while a higher percentage of female participants received support from friends of any age and partners.

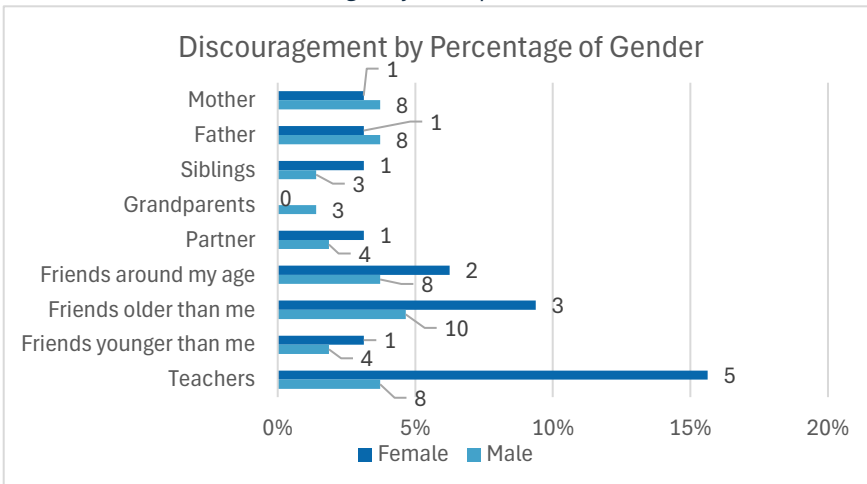


Figure 16: Male (n=27) and female (n=9) participants, who were discouraged in their career choice, were discouraged by these parties.

Participants were then asked who discouraged them. 50 participants reported that they were discouraged by someone. Again, male and female selections can be seen in Figure 16. Here, the number of female respondents (16%) indicating discouragement from teachers seems especially noteworthy.



# Appendix

## A1 General Information

The survey was offered in English and German. It produced a total of 263 responses, 206 of which were submitted to the English survey, 57 to the German one. As the surveys are direct translations of each other, they are evaluated as one.

The survey was conducted on LimeSurvey, and responses were collected from May 14<sup>th</sup> to November 4<sup>th</sup>. Responses were spread across the collection timeframe as can be seen in Figure 17.

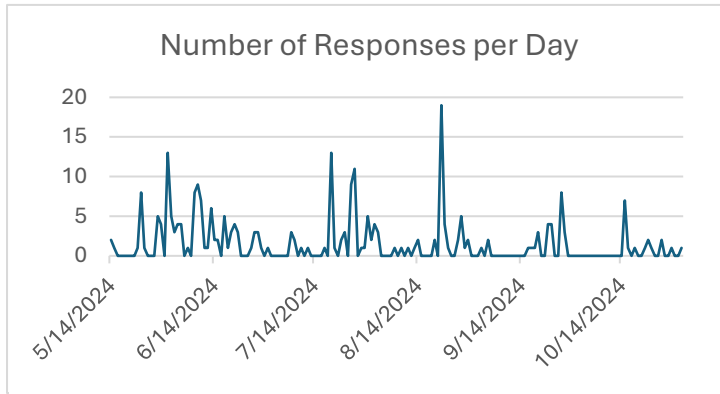


Figure 17: The number of responses per day.

Of 263 responses, 12 failed one out of three attention tests and 26 failed two out of three attention tests. No respondent failed all three attention tests. Surveys with failed attention tests were manually checked for coherence and plausibility, leading to only 1 response being disqualified. The total number of evaluated responses is 262.

As results provided as percentages are rounded to full numbers, it is possible that they might not add up to 100% exactly.

94% of participants (strongly) agreed that they answered the questions carefully and 79% (strongly) disagreed with the idea that they were distracted, for example by phone calls or other people, while completing the questionnaire.

## A2 Demographic Information

Of the remaining responses, 12 % were by women, 82% by men, 2% by non-binary participants, 2% other, and 2% preferring not to say.

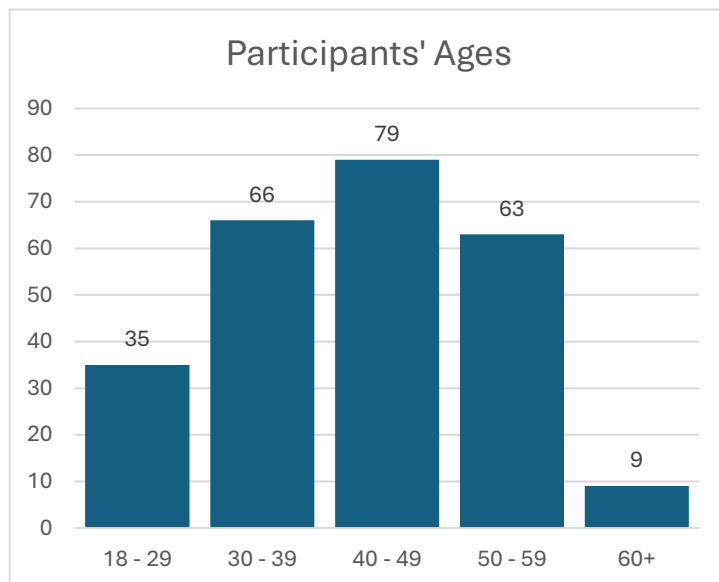


Figure 18: A histogram of participants' ages for those who chose to disclose it (n=252).

Participants' ages were collected by asking about their birth year. 10 participants declined to answer, for the remaining participants the median age was 44 years old (see Figure 18).

Participants were mainly from Germany (45%), the United States (21%) and Spain (14%). Of the remaining participants, 11% were from Europe, 5% were from other parts of the world. 4% of participants preferred not to say.

Participants were asked to indicate their highest education level. Of the 262 participants, 10 did not select one of the options provided, about 24% indicated some college, an associate degree or equivalent. About 26% indicated that they had a bachelor's degree or equivalent, and about 23% reported a master's degree or equivalent. About 14% had an entrance certificate for university or college and about 4% had less than that. About 5% had a professional degree or a Ph.D. or equivalent.

56% of participants reported not having children, 36% did have children.