

# Determinants and consequences of sexual harassment: Lessons from linked Danish survey and administrative data\*

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## 1 Introduction

Sexual harassment (SH) – any form of unwelcome verbal, non-verbal, or physical behavior with sexual undertones that intends to or does violate a person’s dignity – is a major threat for a productive study and work environment. Experiences of SH may not only negatively affect physical and mental health, but likely have long-term career consequences. Around half of all women and 10 percent of men become victims of SH during their work lives (Hersch, 2015). In Denmark in 2023, 7 percent of women and 2 percent of men report having experienced sexual harassment at their workplace in the last 12 months alone.

Causal evidence on the effects of SH is scarce. Folke and Rickne (2022) have recently shown for Sweden that SH is part of a vicious cycle of workplace gender segregation: men and women are more likely to become victims if they work with a majority of opposite-sex co-workers. Minority workers leave (or do not enter) at-risk workplaces, increasing further the gender segregation and risk to remaining minorities. This cycle may have substantial economic costs through suboptimal allocation of skills: Problems range from the ‘leaky STEM pipeline’ of women to the lack of male role models in early education or to the increasing need for care sector workers.

The reinforcing pattern of SH risk and gender segregation may start earlier, during education. While SH has been shown to be prevalent in Danish educational institutions (Lesner et al., 2024; Analyse og Tal, 2018), we have simply no evidence on consequences for victims and their peers, or to what extent SH contributes to gender segregation in fields of study and later occupational choice (Zölitz and Feld, 2021).

This project describes the determinants of SH risks – with a focus on education and workplace sex ratios – and analyzes the consequences of SH experiences. We create and use a unique combination of Danish individual-level survey data linked to administrative data on careers and non-labor market outcomes (such as health status) of SH victims, their families, and co-workers.

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## 2 Policy relevance

SH imposes significant costs on individuals, firms, and society at large. Victims endure health burdens, which in turn place increased demands on social security systems (Hersch, 2011, 2015). Our project will contribute relevant evidence on the determinants and consequences of SH (both instrumental for the design of policy). Empirical evidence indicates that SH influences workers' employment choices (Folke and Rickne, 2022; Adams-Prassl et al., 2023) and their likelihood to leave employers. Such career disruptions can lead to persistent earnings losses, reduced employment probabilities (Couch and Placzek, 2010; Eliason and Storrie, 2006), and poorer quality of worker-firm matches (Fackler et al., 2021; Lachowska et al., 2020). Firms experience a depletion of firm-specific human capital (Poletaev and Robinson, 2008). The resulting occupational gender segregation and misallocation of talent becomes particularly costly in an era of shifting skill demands: Men often avoid socially-intensive “pink collar” care roles (Delfino, 2021), which are increasingly important (Deming, 2017). The cycle of gender segregation begins with gendered educational choices (Cortes and Pan, 2018), which might be influenced by earlier SH experiences in secondary and higher education.

## 3 Our study

Our project asks two questions: What are the drivers of SH risks in educational and labor market settings (in particular, what is the role of gender segregation), and how does SH impact victims, their families and peers, and the firm? We extend previous work in the following ways: First, by integrating surveys from educational and workplace settings with administrative data, we pioneer the documentation of the evolution of SH risks and their consequences across multiple career stages and provide key insights into how SH contributes to persistent labor market gender segregation. Second, we examine the spillovers of SH on families, peers, and co-workers. Using event study designs, we estimate causal effects of the consequences of SH, which has not been done for educational settings before.

**Data** We combine multiple surveys with Danish administrative data: First, we use student surveys for upper-secondary and tertiary education institutions. These surveys assess well-being, and among other aspects also the experience of SH. At the upper-secondary level, there are yearly surveys from 2017-2023 for the full student body at vocational schools and academic upper secondary schools. At the tertiary level, there are 3 waves of “Denmark’s Study Survey” in 2020, 2021 and 2023 at all institutions, allowing us to exploit longitudinal information on the study program level. The questions here distinguish between unwanted sexual attention and physical acts. Second, to examine SH in the workplace, we use 2021 and 2023 waves of the national survey of work con-

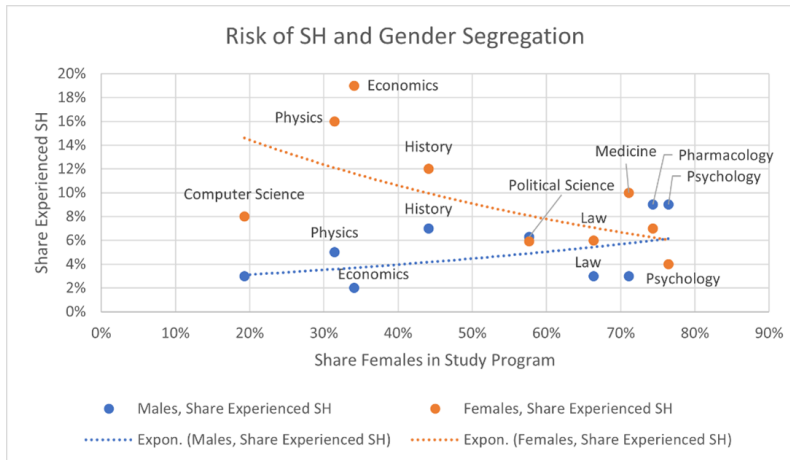
ditions conducted by “Arbejdstilsynet,” with about 30,000 and 22,000 respondents, respectively.<sup>1</sup> Respondents report the perpetrator of SH, including colleagues, supervisors, subordinates, clients, or patients. While the survey contains items on SH, this is not its exclusive focus. Together with guaranteed anonymity, this helps minimize interviewer demand effects and desirability bias.

We link all surveys to administrative data at Statistics Denmark to follow respondents’ educational and labor market trajectories, both prior to and after the survey responses, and to characterize educational programs’ and workplaces’ gender ratios. Family links and workplace information allow us to study spillovers.

**Empirical analyses** Even before workers’ labor market entry, there is strong gender segregation in educational choices. In descriptive analyses, we will first document variations in SH risk for men and women by their share of opposite-gender peers in a given educational program.

Figures 1 and 2 exemplify the variation that we will use: Figure 1 shows the share of students who experienced unwanted sexual attention in the previous 12 months by the share of females in a selection of study programs at the University of Copenhagen in 2023. The risk for SH for both men and women decreases as they become the majority in a program. Compare, for example, economics (predominantly male) and psychology (female-dominated and most risky for males). This crude and descriptive pattern will be the starting point for our detailed analyses.

**Figure 1** Share respondents by gender who experienced unwanted sexual attention in last 12 months, by female share in selected programs at UCPH, 2023, and exponential fit lines.



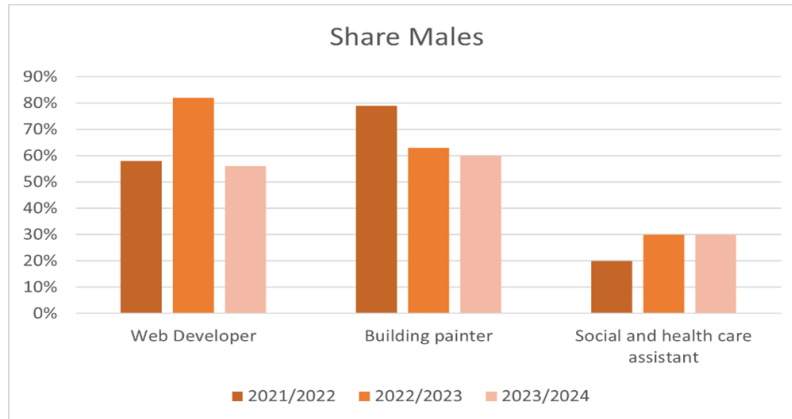
Source: UCPH, *Studiemiljøundersøgelse 2023*, and Ministry for Research and Education.

Variation across programs confounds many program-specific characteristics. To isolate the role of gender shares, we explore within-program-over-time variation in the gender composition

<sup>1</sup>The survey sampling is stratified across industries. This survey has a significantly larger sample size than the corresponding Swedish survey used in Folke and Rickne (2022). Thus, we likely have more power to examine rare phenomena like SH in segregated workplaces, as well as the interaction of workplace ratios with other characteristics that shape those risks. Moreover, for a small subset of observations, this survey allows to link individuals over time.

of entrants.<sup>2</sup> Figure 2 illustrates the key within-program variation over time in the share of male entrants for three male- and female-dominated vocational programs (focusing on data for the municipality of Copenhagen). Within both large and small programs, there is considerable year-to-year variation in the gender composition of entry cohorts.

**Figure 2** Share of male entrants in vocational education programs in Copenhagen by entry cohort.



*Source: Ministry of Children and Education, uddannelsesstatistik.dk.*

In a second step, we will analyze the consequences of SH at educational institutions for both educational success or dropout, and subsequent labor market outcomes. These analyses address identification challenges using event study designs, following students over time and matching victims to observationally similar control individuals. We examine consequences of SH on educational transitions, mental health outcomes and labor market entry decisions 2-6 years later.

Moving to analyses on the labor market, we similarly start by describing workplace SH risks by workplace gender composition (reproducing analyses by Folke and Rickne, 2022). We add nuance to these analyses by factoring in other workplace characteristics observed in our survey and register data: First, we study patterns in who perpetrators are, and whether these patterns vary across male and female dominated occupations/workplaces. Aggregate statistics for Denmark suggest that young females with exposure to customers face the highest SH risk, and that customers/patients are the main category of perpetrators (Beskæftigelsesministeriet, 2024). Second, we zoom in on workplace hierarchies: Adams-Prassl et al. (2023) have recently shown for Finland that the gender composition of a firm’s management matters for firm responses to workplace violence. Third, we analyze the prevalence of non-standard employment, its importance for SH and its interaction with the workplace gender composition. Anecdotal evidence suggests this is a core factor driving SH prevalence, especially for young workers. Finally, Folke and Rickne (2022) are silent on public vs private sector jobs. Given the strong gender segregation of the Danish workforce along this

<sup>2</sup>Publicly available data does not yet allow this, since Fig. 1 would have to cover additional years. None of the public data tools on the study environment surveys (University of Copenhagen, Aarhus University or the Technical University, DTU) allow for a joint assessment of gender ratios and SH over time.

dimension, we use our large survey sample to consider this distinction.

Finally, we assess the costs of SH on the labor market and aim for causal evidence on (1) the consequences for victims and their families beyond labor market transitions, and (2) the impact on firms. We consider several dimensions, including mental health care take-up and family formation and stability, as well as educational and labor market choices of other family members of SH victims, in particular siblings. To identify impacts, we use an event study approach for outcomes of SH victims (as well as their peers and siblings) and matched controls.<sup>3</sup> For firms, we also use event studies to examine whether we observe differential hires across otherwise comparable workplaces with and without realized SH cases. “Treated” workplaces may hire other or fewer workers relative to similar workplaces workers shy away from workplaces with high SH risks.

## 4 Budget and Expected Output

This application primarily concerns funding for data infrastructure and the first set of descriptive analyses for both the role of sex ratios for SH risks. These analyses will result in one scientific paper. We plan to apply for additional funding in order to carry out the subsequent analyses on the consequences of SH experience on short- and longer-run outcomes of victims, their peers and families, as well as firms. Given that the survey data we will use are relatively recent, we will update the project data at DST for these analyses with additional rounds of the survey and with new administrative data as soon those become available.

We have already done some preliminary work on the project: We are in contact with both DST and Arbejdstilsynet (AT), who will provide the student wellbeing-survey and the work environment surveys. We will set up all data sources during fall 2024 and perform descriptive analyses in winter/spring 2024/2025. We will provide a working paper on these analyses by December 2025.

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<sup>3</sup>We use a host of individual level controls to make SH victims and control individuals observably similar. For a subset of respondents, the workplace survey has a panel nature, which may additionally allow for an analysis of self-reported job satisfaction. The 2025 workplace data collection will further strengthen this panel dimension.

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