How did federal agencies respond to disability quotas?

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Abstract

We study the rollout of two disability related policies that intended to increase representation in the U.S. federal workforce—an executive order to increase employment across all agencies, and a second that mandated quotas be met at each agency. The first of these is followed by a large increase in disability employment. At lower-pay positions, increases in representation are largely through hiring, while at higher-pay positions increases are through updating disability statuses. However, with the quota introduction we find evidence that agencies target the minimum threshold—this lead to declines in disability representation at agencies that were already in compliance.

Keywords: disability, affirmative action, employment quota

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1 Introduction

It was President Bill Clinton who first called for the federal government to employ an additional 100,000 individuals with disabilities. However, few steps were ever taken to implement the executive order. This lack of progress is cited in President Barack Obama's 2010 Executive Order 13548—a lack of "steps" toward progress, even—where the same demand is made, for federal agencies to collectively increase the representation of federal workers with a disability by an additional 100,000. In early 2017, the Equal Employment Opportunity Commission (EEOC) followed up on this interest with a clearer articulation of their intent to hold individual agencies to enumerated requirements—previous efforts were deemed "not sufficiently advancing the employment of qualified individuals with disabilities." Under the EEOC mandate, *Affirmative Action for Individuals With Disabilities in Federal Employment* (82 FR 654, Document No. 2016-31397), all federal agencies must now maintain baseline levels of disability representation at 12 percent of their permanent workforce among both "lower" (GS 1–10) and "higher" (GS 11–SES) pay scales, with two percent of their permanent workforce to be from a subset of "targeted" disabilities. At the time of the Obama executive order, disability representation was roughly five percent of a 2.5 million worker federal workforce—an additional 100,000 workers with a disability would therefore increase representation to roughly nine percent. The 12-percent mandate should therefore be interpreted as an increase, generally. More-notable, however, may be that the EEOC mandate did away with the whole-of-government approach and made clear for the first time that the intent was to hold each agency accountable to representation requirements. In this paper we analyze the changes in representation through this period, around the initiation of Executive Order 13548 in 2010 and the subsequent mandate initiated by the EEOC in 2017.

While the Americans with Disability Act (ADA) is not a mandate for employment—the ADA is a U.S. civil rights law that prohibits discrimination against individuals with disabilities in all areas of public life—its potential influence on labor-market outcomes is relevant context for our analysis. On that front, there is somewhat mixed evidence. For example, Acemoglu

and Angrist (2001), Beegle and Stock (2003), and DeLeire (2000) suggest that there were no increases in employment for individuals with disabilities induced by the ADA, while Kruse and Schur (2003) suggests that official disability status may not well represent the true response and that disability employment increased under a broader definition of disability. Jolls (2004) also suggests that the ADA may have induced workers with disabilities into education, partially contributing to the lack of increases immediately following the ADA.[1]

More directly relevant to our analysis is the literature specifically on disability employment mandates, which tends to draw from policy variation internationally. For example, Lalive, Wuellrich and Zweimüller (2013) suggests that there was a meaningful increase in representation following Austria's Disabled Persons Employment Act (DPEA), which was established in 1969 and mandated that Austrian firms with more than 25 employees maintain four-percent disability representation. Lalive et al. (2013) also suggests that marginal firms appear to manipulate whether they are subject to the quota—avoidance behavior allows firms to escape the mandate. Krekó and Telegdy (2025) similarly evaluates the effects of a Hungarian disability employment quota that requires firms over 20 workers to employ people with disabilities or pay a noncompliance tax. Identifying off of an increase in the penalty for noncompliance and a discontinuity in where the quota binds, patterns of employment are consistent with firms responding to such mandates. Nazarov, Kang and Von Schrader (2015) exploits changes to South Korea's disability employment quota system in the mid 2000s that expanded the number of employers covered by the quota system and increased the financial incentives for employing individuals with disabilities, and suggests that the changes increased labour force participation but had a limited positive impact on the probability of employment among people with disabilities. Szerman (2022) considers Brazil's National Policy for the Integration of Persons with Disabilities (Decree 3,298), which was established in 1999 and mandated two-percent disability representation for firms with at least 100 employees—the policy increased employment opportunities for workers with disabilities, though partially driven by changes in worker reporting

[1] In a UK context (Bell and Heitmueller, 2005) provides evidence of a leveling off, if not a decrease in disability employment following the implementation of an anti-discrimination act that protected workers with disabilities.

of disability status. However, de Souza (2023) finds small negative impacts among individuals without a disability, in both wages and employment, suggestive of declines in aggregate welfare as a result of the policy. In this context, Berlinski and Gagete-Miranda (2025) also finds that fines for noncompliance lead to large spillovers on other related firms—estimates suggest that indirect increases in disability hires at other firms are up to 3.4 times that associated with the direct effects of fining a company. Duryea, Alvear and Smith (2024) considers Chile's Labour Inclusion Law (Law 21.015), which introduced a mandatory one percent employment quota for people with disabilities in 2018, finding a 15- to 20-percent increase in disability employment at eligible firms. Duryea et al. (2024) also conducts an experiment by sending letters to firms, informing them about the new disability quotas—this shock to information is associated with large increases in compliance, but mainly through induced changes in the disability status of incumbent workers.

While previous literature has studied policies with a financial penalty for noncompliance, we study a policy change with a "soft" quota—where noncompliance has no financial penalty. In this setting, we find that increases in disability representation are quite large, on the order of 39.5 percent increase among the GS 1–10 workforce at the average agency, and 38.9 percent increase among the GS 11–SES workforce at the average agency. This alone suggests that a soft quota can be effective at improving public labor market outcomes for individuals with disabilities. Further, we find evidence of different mechanisms mattering more for representation at GS 1–10 and GS 11–SES. Among the GS 1–10 workforce, increases in representation are largely achieved through hiring. To the contrary, increases in representation among the GS 11–SES workforce are coming through incumbent workers changing disability status. This is where managers and directors are in the federal pay scale, which may suggest an alignment of incentives or shared objectives in meeting the EEOC mandate—particularly as managers and directors are accountable for the communication and progress around the mandates. Around the enumerated quotes of the EEOC, agencies that saw the largest increases in representation are the same agencies that subsequently appear to target the numerically articulated quotas thereafter, which can be associated with reductions in representation. With the administrative

data to identify which of the 35 disability codes see the largest gains, we find that unlisted disabilities account for a large portion of gains through the Obama period. Together these findings highlight that soft quotas can be effective for increasing disability employment, however quotas set too low may lead to reductions.

The paper is organized as follows. In Section 2 we provide a detailed description of both policies in the U.S. federal workforce context and data details. In Section 3 we present results on the impact of these policies on disability representation. In Section 4 we analyze the various sources of contributions to this increase in disability representation. We then offer concluding remarks in Section 5.

2 Background and data

2.1 Background

We consider two separate policies initiated by the federal government to increase disability representation in the federal workforce. In July of 2010, President Obama issued Executive Order 13548, referring within it to the Clinton-era call "for an additional 100,000 individuals with disabilities to be employed by the Federal Government over 5 years."[2] This policy envisioned an all-of-government approach to increasing disability representation, with no agency-specific mandates to increase representation.

In January of 2017, the EEOC issued its ruling that would amend the regulations that require federal agencies to engage in affirmative action for individuals with disabilities.[3] Specifically, *Affirmative Action for Individuals with Disabilities in Federal Employment* mandates that each federal agency is to maintain a minimum of 12-percent disability representation among full-time permanent employees, and a minimum of two-percent representation in a smaller category of "targeted" disabilities—those with a targeted disability contribute to both the 12- and 2-

[2] Follow this link to Executive Order 13548 at obamawhitehouse.archives.gov for the official order.
[3] The final ruling is available at this link at federalregister.gov.

percent quotas.[4] This rule change is binding separately on General Schedule (GS) grades 1 through 10 (i.e., "lower" pay grades), and on grades 11 through to the Senior Executive Service (i.e., "higher" pay grades). Agencies that do not satisfy representation requirements are required to develop and implement a plan that "provides sufficient assurances, procedures, and commitments to provide adequate recruitment, hiring, and advancement opportunities for individuals with disabilities at all levels of federal employment."

Standard administrative processes charge the EEOC with tracking disability status in the federal workforce—this is accomplished through the collection of management directive form MD-715. As part of this annual exercise, all federal agencies review their workforce representation and initiate plans to improve their diversity if they are below the quota threshold. To enable federal agencies to measure disability within their respective workforce, all new workers are required to complete form SF-256 that prompts them with the opportunity to identify their disability status. Form SF-256 provides categories of disability within a set of "targeted disabilities or serious health conditions" and within a larger set of "other disabilities or serious health conditions." In completing the form, workers also have the opportunity to declare "I do not wish to identify my disability or serious health condition," "I do not have a disability or serious health condition," or "I have a disability or serious health condition, but it is not listed on this form."[5] As a general rule, disability status is self reported, and there is no requirement that the disability be medically documented unless under a special hiring appointment.[6] Workers can also change their status at any time while employed within the federal workforce. The SF-256 form has gone through multiple changes over time. (See Table 1.) From the 2010–2016 version to the 2017–2023 version, eight disabilities were added to the list, and some disabilities

[4] The EEOC describes its selection of targeted disabilities as follows: "Criteria used to select the nine disabilities that make up the group of targeted disabilities included the severity of the disability, the feasibility of recruitment, and the availability of work force data for individuals with targeted disabilities. EEOC recognizes that there are disabilities that are not designated as a 'targeted disability,' but may nevertheless be just as severe, or more severe, than some targeted disabilities." For the EEOC documentation, follow this link at eeoc.gov

[5] SF-256 originated in 1987, but was revised in 2010 and 2016. The current version of SF-256 is available at this link at opm.gov.

[6] If workers are hired under Schedule A, workers must provide medical documentation of their disability to human resources. Schedule A hiring is a particular type of hiring for workers with a disability. Schedule A also tightens the constraint that medical documentation be provided when reporting a disability.

were newly designated as targeted, to count toward each agency's need to maintain two-percent representation among targeted disabilities.[7] For our analysis, we hold constant the definition of targeted disability, using the current classification of disabilities (introduced with the EEOC mandate in 2017).

Further, it is clear that agencies were aware of the new disability representation goals at least insofar as they were required to describe how they had communicated the numerical goals to the hiring managers and recruiters within the MD-715 report. Typical responses are that the agency "distributed an annual memo to all [agency] employees requesting verification/updating their disability code" or that "hiring managers were made aware of numerical goals with each recruitment action," or that they had "communicated its numerical goals with hiring managers and recruiters [...] and by conducting an annual State of [the Equal Employment Opportunity] Brief for the Secretary, Deputy Secretary and senior leadership."[8] In some instances, agencies also provided updates to employees with their progress toward meeting the objective levels of representation in the last year, along with the re-articulation of broader objectives and opportunities to participate in those efforts.[9] In still others, human resources departments undertook efforts assure that they had up-to-date records of all existing disabilities.[10] These

[7] The bolded text in Table 1 represents targeted disabilities. Targeted disabilities were redefined to include: all forms of hearing loss, all forms of vision loss, all forms of missing extremities, and all forms of paralysis, disfigurement, mobility impairment, developmental disorders and traumatic brain injuries.

[8] Specifically, in 2015 the U.S. Air Force responded as follows: "Distributed an annual memo to all Air Force service employees requesting verification/updating their disability code in MyBiz." In 2017, the Department of Commerce responds as follows: "Hiring managers were made aware of numerical goals with each recruitment action." In 2019, Housing and Urban Development responded as follows: "HUD communicated its numerical goals with hiring managers and recruiters through Department-wide dissemination of its annual MD-715 Report and by conducting an annual State of EEO Brief for the Secretary, Deputy Secretary and senior leadership.")

[9] From the 2019 Department of Navy Affirmative Action Plan (link to source) we learn that "the major commands were able to utilize OEEO's Fact Sheet, 'Updating Your Disability Status' as a resource to augment their efforts. The Fact Sheet detailed the DON's goal to ensure that at least 12 percent of the total workforce is comprised of Individuals with Disabilities (IWD), and 2 percent of Individuals with Targeted Disabilities (IWTD). The mandatory EEO web-based training for supervisors, hosted by the DON's Total Workforce Management System, contains a module solely for the IWD Program. This module lists the DON's 12 percent goal of employing IWD and 2 percent goal of employing IWTD... . The training must be taken within 1 year of initial appointment to a supervisory position, and then as a refresher at least once every 3 years thereafter."

[10] In a 2012 issue of Air Force News (link to source), for example, an AFPC Workforce Planning and Enterprise Recruiting chief is quoted describing this process with "To ensure equitable hiring practices, all federal agencies are working to update disability records, and to increase employment opportunities for people with disabilities," and "The first step for the Air Force is to make sure our records are up-to-date and all civilians with disabilities are able to self-identify."

actions suggest that, despite no financial penalties, agencies made efforts to be in compliance with both the executive order and the EEOC mandate.

2.2 Data

The primary data source we rely on is available through the U.S. Office of Personnel Management (OPM) under the Freedom of Information Act (FOIA). Specifically, we consider yearly aggregates at the agency by higher/lower GS, from 2003 through 2023—we observe counts of permanent workers employed in September, and counts of the hires and separations of permanent workers since September of the preceding year.[11] Importantly, we also observe counts by disability status. As is customary, we are limited to cell sizes of four. Thus, we secured data at the agency by higher/lower pay grades, allowing us to consider the EEOC mandate on the units on which it is active while preserving the greatest fidelity with respect to the cell sizes we are permitted to receive. (We are unable to separately observe disabilities in GS 8 and GS 9, for example, as they are pooled into the GS 1–10 category.) While additional fidelity would allow for more heterogeneity across pay grades, the cell size would bind quickly on disability categories. In particular, counts less than four are very restrictive for separate categories of new hires and separations. To limit this, we restrict our sample to all federal agencies that are greater than one percent of the total permanent federal workforce. This restricts our sample to the largest 14 federal agencies that represent roughly 92 percent of the total permanent federal

[11] For non-GS positions, OPM coded jobs based on their salary in accordance with the mandate when aggregating the data: "In addition to the information described above, agencies that have employees who are on neither the GS nor the SES pay scale will need to determine how many such employees—are individuals with disabilities and have salaries equal to or greater than an employee at the GS–11 step 1 level in the Washington, DC locality ... are individuals with disabilities and have salaries less than employees at the GS–11 step 1 level in the Washington, DC locality... ." (Link to source.)

workforce.[12] As the mandates are measured at the agency level, we report results where all agencies are equally weighted.

To provide context for the changes in representation over time, we also report levels of disability in the American Community Survey (ACS)—specifically, annual measures of disability among the employed population between aged 18–64. We also allow for this survey to be used as a control group, against which we can measure changes in relative representation at the federal agencies.[13]

3 Empirics

3.1 Disability quotas and changes in representation

In Figure 1 we plot the representation of permanent federal workers with disabilities, from 2003 through 2023. As representation is evaluated by the EEOC separately in the GS 1–10 and GS 11–SES workforces, we likewise consider these categories separately throughout our analysis. In Panel A we provide disability rates over time, pooled across all agencies each contributing equally. The first thing of note is the relatively stable rates of disability in the permanent

[12] Where cell sizes are below four for a given agency-disability-year in either GS 1–10 or GS 11–SES categories—though, this will apply separately to the stock, to the number of hires, and to the number of separations—we do not observe the breakout of the count by GS category. That is, we observe only the total across both GS 1–10 and GS 11–SES. However, in many cases we see which of the two is more likely to be inducing the binding restriction by looking at other years for the same agency-disability (which often has a four reported, for example). Where counts in other years are available, we impute GS 1–10 and GS 11–SES counts in the masked years by assuming that there are three in the same GS category that was closest to binding on average in neighboring years (e.g., the agency reported having four workers in one of the disability-GS cells in other years, but 90 in the other disability-GS cell in those years). Where there is no other years for a given agency off of which to infer which GS category was below four, we follow a similar procedure at an aggregate level (i.e., across agencies). In the end, we impute the GS category for 77,610 worker-years out of a total 39,578,804 worker-years (i.e., 0.2 percent of total worker-years, on average. Similarly for hires, this is 40,035 hire-years out of a total 3,381,704 hire-years (i.e., 1.2 percent of total hire-years, on average. For separations, this is 40,083 separation-years out of a total 3,346,222 separation-years (i.e., 1.2 percent of total separation-years, on average. For years with fewer than a total of four across GS 1–10 and GS 11–SES, we impute zeros.

[13] In the early years of our sample (2003–2007), the ACS included the following disability categories: sensory disability, physical disability, mental disability, self-care disability, go-outside-home disability, and employment disability. For the remainder of the sample, the ACS questionnaires introduced a new set of disability questions, covering six disability types: hearing difficulty, vision difficulty, cognitive difficulty, ambulatory difficulty, self-care difficulty, and independent living difficulty. In all econometric models we capture this change in ACS as a level shift. However, while we suggest caution when comparing specific disabilities in the ACS over time, we nonetheless consider the ACS as representative of the population from which the federal workforce may be drawn. For a history of the ACS questionnaires, follow this link at census.gov.

federal workforce prior to the Obama executive order in 2010. Representation is higher among GS 1–10 workers (between 2003 and 2009, 8.3 percent report having a recognized disability) than among GS 11–SES workers (5.5 percent), but there is little suggestion that representation is changing in either category of employment through 2009.

With the 2010 executive order, however, representation among both lower- and higher-level workforces increase. Interpreting these changes as responsive to the policy initiatives becomes more plausible by comparing them to other measures of disability—this is true around both the executive order and the EEOC mandate. In Panel A of Figure 1 we therefore plot disability rates among the employed population in the ACS between aged 18 to 64, which is lower but relatively flat through 2016. Against this pattern, from 2009 (the year prior to the executive order) through 2016 (the year prior to the EEOC mandate), disability rates at federal agencies increase by 41.3 and 40.4 percent among GS 1–10 and GS 11–SES, respectively (from 8.0 to 11.3 and from 5.7 to 8.0 percent, respectively). Interestingly, the rates of increase among federal workers slow thereafter—this is more evident among GS 1–10 workers than it is among GS 11–SES workers—even as disability rates begin to increase in the ACS in this period. Notably, this slow down is despite the EEOC's 2017 introduction of the first agency specific enumeration of the levels they would be held to.

In Panel B of Figure 1 we consider the comparisons more directly, reporting estimates from event studies that compare disability in the federal workforce to that among participants in the annual ACS surveys. Separately for GS 1–10 or GS 11–SES workers, we report the $\hat{\beta}_k$ retrieved from

$$Y_{it} = \alpha_i + \lambda_t + \sum_{k \neq 2009} \beta_k \times D_i \times Year_k + \varepsilon_{it}, \tag{1}$$

where Y_{it} are disability rates for unit i at time t, α_i are unit fixed effects (e.g., individual agencies and the ACS), and λ_t are time fixed effects.[14] D_i are indicators for treatment and $Year_k$ allow for year-specific treatment effects—$\hat{\beta}_k$ identify differences in representation between

[14] For the ACS, we allow the model to more flexibly fit the parameters by using separate fixed effects for the ACS from 2003 to 2007 and 2008 to 2023 due to the change in the survey methodology. Further, we allow standard errors to be clustered at the unit level (Cameron and Miller, 2015).

federal agencies and the ACS relative to the difference that existed in an omitted period, which we set to 2009 the year prior to Executive Order 13548 was enacted.

Model (1) quantifies the change in relative disability rates at federal agencies. For example, between 2009 and 2016, the GS 1–10 and GS 11–SES workforces gain 3.16 percentage points (39.5 percent) and 2.21 percentage points (38.9 percent) relative to the ACS over this period. They also reveal that the gap between federal agencies and ACS representation attenuates somewhat with the initiation of the EEOC mandate in early 2017.[15] Among GS 1–10 workforces, the relative rate of change plateaus in this period—the average change in representation (relative to the ACS) is 0.04 percentage points each year between 2017 and 2023. Among GS 11–SES, year-over-year increases in representation do fall off slightly after 2017, but the decline in trend is insignificant ($p = 0.266$) when compared to the trend in the ACS.[16]

3.2 Do agencies in EEOC compliance respond differently?

While earlier executive orders called on the federal government to employ an additional 100,000 individuals with disabilities, the EEOC mandate was the first time a target rate of representation was attached to these stated interests—to attain and/or maintain 12-percent representation. Of more potential consequence, however, is that the earlier regimes envisioned an "all of government" approach, of sorts, with no single agency directly responsible for increasing representation—the EEOC mandate would hold individual agencies responsible for reporting progress toward these goals. In that context, that representation slows (on average across agencies) following the EEOC's mandate suggests that agencies may well have learned that they were indeed in compliance.

To consider this further, in Panels A and B of Figure 2 we report representation levels and estimates of event-study models (as in Equation 1) separately for the six agencies (of the

[15] Relative to the ACS, there is a significant trend change ($p = 0.007$) in disability rates among GS 1–10 workers following the introduction of the EEOC mandate. To estimate time trends (using the ACS as a counterfactual) for each regime, we estimate the following model: $Y_{it} = \beta_0 + \beta_1 D_i + \beta_2 1\{t \in p\} + \beta_3 t + \beta_4 (t \times 1\{t \in p\}) + \beta_5 (D_i \times t) + \beta_6 (D_i \times 1\{t \in p\}) + \beta_7 (D_i \times t \times 1\{t \in p\}) + \alpha_i + \varepsilon_{it}$ where $p \in \{2003-2009, 2010-2016, 2017-2023\}$.

[16] Relative to the ACS, representation in the GS 11–SES workforce gains 0.30 percentage points each year in the years before the EEOC mandate, and 0.17 percentage points each year thereafter, on average.

14 federal agencies we consider) that had met the representation quotas articulated in early 2017 as part of the EEOC mandate (sub-panel i) and the eight that had not (sub-panel ii). In the GS 1–10 workforce, the slowing of gains in representation is indeed more stark among the agencies that would have learned with the EEOC mandate that they were already in compliance. They were growing at an annual rate of 0.78 percentage points between 2010 and 2016, but at 0.22 percentage points annually thereafter. (In every case, these agencies had risen to compliance only after the earlier Obama executive order was issued, and representation among them clearly stabilizes after 2016.) The fall off in gains at the agencies that did not satisfy the EEOC mandate at its implementation is smaller. They were growing at an annual rate of 0.43 percentage points between 2010 and 2016, but fall to 0.36 percentage points annually thereafter—a smaller decline than was experienced at compliant agencies consistent with the patterns in the pooled data (Figure 1 Ai) being driven by agencies in compliance.[17]

In Panel B we again show these patterns relative to the ACS directly. The gap in representation among agencies and the ACS was not changing prior to 2010, after which representation among federal agencies (both compliant and non-compliant) increases relative to the ACS, coincident with the Obama executive order. The gap continues to grow throughout the period of the executive order. However, with the introduction of the EEOC's enumerated target, the gap in representation between agencies in compliance and the ACS reverses direction—having widened for eight years, it begins to narrow after 2017. To the contrary, agencies not in compliance with the EEOC mandate continue to increase relative to the ACS. In general, we interpret the differential responsiveness around the EEOC mandate as agencies having been mindful of the charge prior to 2017, but also willing to anchor their response to the enumerated level of representation first articulated by the EEOC in early 2017.

[17] Among agency's GS 11–SES workforces, only one had satisfied the 12-percent mandate—representation at the United States Air Force increased in the 2010–2016 trend in the GS 11–SES by 1.7 percentage points annually, and 0.63 percentage points annually thereafter.

3.3 Targeted disabilities

With the EEOC mandate introduced in early 2017, agencies were also given a second objective—each agency was to attain and/or maintain two percent of their permanent workforce from a list of targeted disabilities (see Table 1). In Figure 3 we therefore restrict our attention to only targeted disabilities—in Panel A we plot rates across all agencies, and in Panel B we show the relationships separately by whether agencies were already in compliance when the EEOC mandated that they achieve two-percent representation across these targeted disabilities.[18]

As was true of overall disability, in the GS 1–10 workforce (Panel Ai) there is an increase in targeted disability representation following the Obama executive order—from 2009 to 2016, representation increases 0.11 percentage points annually, leaving the 2016 rate 0.80 percentage points higher than the 2009 rate at the initiation of the Obama executive order ($p = 0.002$). From 2016 to 2023, representation decreases 0.04 percentage points each year, though by 2023 the level is not significantly different from the 2016 level ($p = 0.216$).

Similarly, the GS 11–SES workforces experience increases after the Obama executive order. Between 2009 and 2016, annual gains were 0.084 percentage points, on average. This represents a significant increase ($p = 0.0016$) in trend relative to the small annual declines in representation of 0.020 percentage points experienced between 2003 to 2009. However, with the onset of the two-percent targeted disability mandate there is a clear plateau—annual increases in representation significantly decline ($p = 0.04$) from 0.084 between 2009 and 2016 to 0.015 percentage points (an 82.4 percent decrease) after 2017. In general, across GS 1–10 and GS 11–SES, we find that the EEOC mandate to maintain two-percent targeted disability representation cannot be associated with increased representation—if anything, empirical patterns suggest that agencies are now targeting these new goals, even when this implies reductions in targeted representation.

When we separately considered agencies in compliance with the EEOC's 12-percent mandate

[18] Due to the Department of Homeland Security not fully complying with the targeted disability goal, we exclude them from the analysis. Quote from DHS (2018) MD715: "DHS set a 12 percent hiring goal for Individuals with Disabilities at all grade levels; a 2 percent hiring goal for Individuals with Targeted Disabilities at all grade levels, excluding Law Enforcement and Transportation Security Officer occupations..."

for disability representation broadly, six of the 14 federal agencies had GS 1–10 workforces in compliance. With respect to targeted disabilities, however, these same six plus an additional six agencies, or 12 agencies total, were above the mandated two-percent representation of targeted disabilities at its introduction. As is the case with overall disability representation, we find that post-2016 declines in targeted representation are larger at agencies that were in compliance with the newly enumerated EEOC mandate when it was announced in early 2017 (Figure 3 Panel Bi). Among these agencies, representation had been increasing at an annual rate of 0.13 percentage points from 2010 to 2016, but declined at a rate of -0.06 percentage points from 2017 to 2023, on average. In comparison, in the one agency (i.e., the Department of Justice) that was below two-percent at the introduction of the EEOC mandate, representation had only been increasing by 0.08 percentage points annually from 2010 to 2016—after the mandate their growth declined at roughly 0.01 percentage points annually. However we highlight that they are at the margin of the two percent threshold—in 2017 their targeted disability representation was 1.78 percent—and further they report being above the threshold suggesting that timing of the reports may affect measurement.[19] For the agencies above the two-percent threshold, there are clear declines in representation with the onset of the EEOC mandate. These agencies were, on average, well above the threshold—targeted disability representation in 2016 for the compliant agencies was 3.7 percent (almost double the minimum two-percent threshold). This suggests that the policy could adversely reduce targeted disability representation at agencies that were in any way targeting the minimum threshold.

While only one agency was in compliance with the broader 12-percent mandate among GS 11–SES workforces, the U.S. Air Force plus an additional nine agencies were above the mandated two-percent representation among targeted disabilities. The representation of targeted disabilities among the GS 11–SES workforce follows a similar pattern, though representation following the EEOC mandate is more of a plateau than a decrease (Figure 3 Panel Aii). When separated out by EEOC compliance, we highlight in Figure 3 Panel Bii that agencies that were

[19] DOJ 2017 MD-715: "The percentage of Persons with Targeted Disabilities (PWTD) in the GS-1 to GS-10 cluster is 2.22 percent, which slightly exceeds the benchmark of 2 percent."

in compliance experienced a significant decline in annual representation gains at the onset of the EEOC mandate—annual representation gains goes from 0.091 percent between 2010 through 2016 to 0.009 percent from 2017 to 2023 (89.9 percent relative decline). While agencies that were not in compliance also experience a decline in annual representation after the EEOC mandate onset, they continue to make gains after the mandate (0.156 percent between 2010 through 2016 to 0.066 percent from 2017 to 2023, a 57.6 percent relative decline). Thus we continue to see small gains towards the minimum threshold for those agencies that are below the minimum two-percent threshold, while plateauing for agencies that are above the threshold.

3.4 Are some disabilities contributing to changes more than others?

In Figure 4 we plot changes in disability representation relative to 2009 for each of the 35 disabilities categories in Table 1.[20] As before, we separately consider agencies by whether they were in compliance with the EEOC mandate at the time of implementation in early 2017 (enforced at the overall disability level at the agency, not on specific disabilities).

In Panel A we plot disability representation in the GS 1–10 workforce and highlight categories that experience the largest changes since the Obama executive order. While contributions vary quite a bit across disability, the clear takeaway is the rise of "Disability (not listed)" claims in the period between the executive order and the EEOC's enumeration of agency goals.[21] Claims of this sort do count toward the 12-percent goals, and operate as a general catchment category, where specific claims of disability are not available on the SF-256 form. Between 2009 and 2016 this single category accounts for the largest gains—41.1 percent of the growth in representation at agencies who are in compliance with the EEOC mandate at its initiation,

[20] For our analysis we keep definitions constant across time by using the categorizations of disability from 2017–2023.

[21] Of those with disabilities in compliant agencies, the top-five most-represented disabilities in the workforce at 2009 were: "Nonparalytic impairments" 2.1 percent of the total GS 1–10 workforce (20.7 percent of those with disabilities in the GS 1–10 workforce), "Diabetes" 1.3 percent (12.5 percent), "Disability (not listed)" 1.2 percent (12.2 percent), "Hearing loss" 1.2 percent (11.6 percent), and "Respiratory conditions" 0.9 percent (8.5 percent). Similarly, agencies not in compliance had proportions of the same magnitude: "Nonparalytic impairments" 1.4 percent of the total GS 1–10 workforce (21.7 percent of those with disability in the GS 1–10 workforce), "Diabetes" 0.8 percent (12.5 percent), "Disability (not listed)" 0.8 percent (11.7 percent), "Hearing loss" 0.7 percent (11.5 percent), and "Respiratory conditions" 0.6 percent (8.6 percent).

and 50.6 percent of the growth in representation at agencies not in compliance.[22] By 2016, "Disability (not listed)" is the most prevalent category across all disability categories—moving from previously the third most commonly used category. (Among GS 1–10, unlisted disabilities make up 11.9 percent, as a proportion of any reported disability, in 2009 growing to 21.5 percent in 2016.) With the 2017 EEOC mandate, disability representation among the compliant agencies slows (Figure 2 Panel Ai), and "Disability (not listed)" is again the most significant driver—over this period it is now decreasing more than any other category of disability.[23] Thus, for both the increase in disability representation and the sudden plateauing of disability representation, "Disability (not listed)" seems largely responsive to both policy platforms. Broadly, this category is responsible for transforming the federal agencies into more-representative workforces.

In Panel B of Figure 4 we plot similar accounts of the GS 11–SES workforce. Here, "Disability (not listed)" is largely the contributor to growth in the GS 11–SES workforce, accounting for 18.6 percent of growth from 2009 to 2023 across all agencies. Due to the Air Force being the only federal agency to have been in compliance, we are limited on our inference for agencies above the 12-percent minimum. Similar to the GS 1–10 workforce, the USAF likewise exhibits large gains in "Disability (not listed)," with increases of 2.19 percentage points following the executive order, which accounts for 30.0 percent of growth from 2009 to 2016.[24] After the EEOC mandate, "Disability (not listed)" declines in trend at the U.S. Air Force. For agencies not in compliance, "Disability (not listed)" also has large gains with an increase of 0.7 percentage points after the executive order. We find that, consistent with GS 1–10, "Disability (not listed)" experiences the largest growth in the GS 11–SES workforces.

[22] In Appendix A, we provide hiring rates by disability type in Figure A.8—across all disability categories, "Disability (not listed)" experiences the largest increases in hiring rates after the Obama executive order and experiences a sharp decline at the announcement of the EEOC mandate.

[23] In Figure A.8 at the time of the EEOC mandate there is a sharp decrease in hiring rates of "Disability (not listed)"—decreasing from 4.3 percent of new hires to 4.3 percent of new hires.

[24] Other disabilities that are large contributors include "Depression", "Hearing loss", and "Diabetes" for GS 11–SES.

4 Contributions from hires, separations, and status changes

There are three mechanisms that can account for changes in representation at federal agencies—hiring new workers with disabilities, failing to retain workers with disabilities, and changes to the disability status of incumbent workers. In Figure 5 we report a waterfall of the stock of workers with reported disabilities, and the year-over-year flows attributable to hiring and separation of workers with disabilities, and to residual status changes that represent the net increases in the number of federal workers with a disability that are not accounted for by hires and separations. Increases in disability levels over time are evident here, of course, while year-over-year flows make it clear that the relative importance of these three mechanisms among the GS 1–10 and GS 11–SES workforces are different.

4.1 Decomposing year-over-year changes

Disability levels in the federal workforce

Increases in the size of the federal workforce with disabilities are evident in Panel A of Figure 5—at the agencies in our sample, the number of workers with disabilities increases from 104,906 in 2003 to 236,504 in 2023.[25] We remove the level increases in the stock of workers with disabilities over time in Panel B, which allows for easier comparison of the relative contributions from hires, separations, and status changes. In Table 2 we also provide estimates of the annual contributions from hires, separations, and status changes, across the three regimes—for 2003 to 2009, 2010 to 2016, and 2017 to 2023.[26]

Of the two potential sources of increased representation, hires and status changes, new hires account for 73.0 percent of the gains in the GS 1–10 workforce between 2003 and 2009, and 74.1 percent of the gains between 2010 to 2016 when the Obama executive order was in effect. (This is also evident in Table 2A, Column 4.) What is most notable with the introduction of

[25] We note that due to our sample, we observe 92 percent of the federal workforce. For the waterfall plot aggregated across GS 1–10 and GS 11–SES, please see Figure A.9.

[26] In Table 2 we regress counts of hires, separations, and status changes (aggregated at the macro level of the federal workforce) on the three regimes, to provide yearly averages of flows. More formally, the model is $Y_t = \alpha + \beta_{2010-2016} \times 1\{2010 \leq t \leq 2016\} + \beta_{2017-2023} \times 1\{2017 \leq t \leq 2023\} + \epsilon_t$.

the EEOC mandate is the 61.2 percent decrease ($p = 0.014$) in status changes (compared to 2010 to 2016)—this decrease implies that new hires then account for roughly 91.3 percent of gains in representation following the EEOC mandate.

The pattern among the GS 11–SES workforce is somewhat different, as status changes are the largest contributor to the increases in disability representation—they account for 63.8 percent of gains between 2003 and 2009 (Table 2 B Column 4). Status changes are even more important in the period between 2010 and 2016 (74.1 percent), before attenuating somewhat (to 69.3 percent) following the initiation of the EEOC mandate in 2017.

Disability rates at individual agencies

While the Obama executive order stipulated that the number of workers with a disability should increase by 100,000, it was only with the EEOC mandate in early 2017 that agencies were directed to individually attain 12-percent disability representation across all disabilities. We provide context for this in Figure 6—for the average agency we show changes in disability rates that would have resulted from unilateral changes in hires, separations, or status changes. This paints an interesting picture of the potential responses federal agencies had to the two policy changes. In Panel A we again see the increase in representation following the 2010 executive order. However, while any hiring or separation of workers with disabilities will increase and decrease representation mechanically in *levels* (in Figure 5) their implications on the *rate* of disability representation depends on the composition of each relative to the agency's existing representation. Thus, we note that Panel A provides the overall disability rate from each year along with the implied changes in base rates from unilateral hires, separations, or status changes—this further highlights the contributions from these three flows.

In Panel B of Figure 6 we plot only the implied contributions of hiring, separations, and status changes to the changes in agency-level disability rates from Panel A. Removing the levels of disability representation isolates the implied contributions from each of these flows. Further, in Table 3 we provide estimates of the implied contributions of hiring, separations, and status

changes to the changes in agency-level disability rates.[27]

There are large gains in representation in the GS 1–10 workforce over time, and hiring contributes to level increases. However, given the rate of disability among new hires, hiring is ultimately a net-negative contributor to rates of representation in the larger workforce—the average *rate* of disability among newly hired workers (5.2 percent between 2003 to 2009) tends to be lower than overall disability rates at the average agency (8.3 percent between 2003 to 2009), and ends up drawing down overall rates of disability in all but three years across our entire period of analysis. In the period between the Obama executive order and the EEOC mandate, when the rates of disability among new GS 1–10 hires are at their highest, those rates are still indistinguishable from baseline rates of disability in the federal workforce ($p = 0.886$). (See Table 3.) Disability rates among new hires are 73.0-percent higher following the Obama executive order ($p = 0.001$), but contributions from hiring decrease again after the EEOC mandate, returning to their pre-2010 levels. Interestingly, compared to the 2003 to 2009 period, there are more losses through separation over the 2010 to 2016 period ($p = 0.001$), at the same time that hires are contributing most to representation. (Across agencies, annual losses from separation increase from 0.12 to 0.25 percentage points.) This suggests that agencies were not effective at retaining workers with a disability despite the executive order specifically calling for agencies to "improve their efforts to employ workers with disabilities through increased recruitment, hiring, and retention of these individuals." In the end, the gains to overall representation among GS 1–10 workers are largely due to disability rates among newly hired workers increasing—implied contributions from hires increases (see columns 1 and 2 of Table 3A), separations worsen (columns 3 and 4) and status changes do not significantly change (columns 5 and 6).

While the GS 11–SES workforce is, as of 2023, still falling short of the mandated 12-percent representation on average (Figure 6 Aii), there are notable gains seeming to commence with the Obama executive order in 2010. However, the mechanism responsible for achieving these gains is also different—here, hires and separations are much smaller contributors to the increases

[27] For the targeted disability version please see Figure A.10.

in representation among GS 11–SES, with status changes accounting for a majority of the change. On average, from 2003 to 2009 annual gains from hires increase representation by 0.002 percentage points (columns 1 of Table 3B), separations account for declines of 0.10 percentage points (column 3), and status changes increase rates of representation by 0.40 percentage points (column 5). With the Obama executive order, there is a significant increase in status changes—annual contributions increase to 0.77 percentage points between 2010 to 2016. The role of status changes continues to be substantial after the EEOC mandate—status changes are still the largest contributor to gains in representation, suggesting they are the primary path for GS 11–SES workforces to meet the minimum 12-percent threshold going forward.

4.2 Are the roles of hiring, separations, and status changes different at agencies in EEOC compliance?

In Figure 7 Ai we reproduce Figure 6 while stratifying agencies by their compliance with the EEOC 12-percent mandate for the GS 1–10 workforce at its introduction. For agencies already in compliance with the mandate in 2016 (see Figure 6 Ai(a)), none had been in compliance at the time of the Obama executive order—they each hired workers with disabilities at higher-than-baseline rates, and newly achieved 12-percent representation before 2017. However, since the mandate in 2017, these same agencies have hired workers with disabilities at lower-than-baseline rates—after 2016, hiring is a net-negative contributor to representation at these agencies, which can be seen in Figure 7 Bi(a). As a result, in Figure 7 Ai(a), there is a plateauing for disability representation. Similarly for agencies below the minimum level of compliance, hiring is also a net-negative contributor. At these agencies, contributions from hiring increase slightly through the period of the Obama executive order, and change little throughout the period of the EEOC mandate—the implied contributions were -0.30 percentage points annually from 2003 to 2009, but increased to -0.13 percentage points over 2010 to 2016 (a 55.1 percent change). While agencies that are not compliant with the EEOC mandate seem to be less responsive, disability representation continues to rise in pursuit of the 12-percent minimum—in contrast, agencies

that are compliant show a clear lull in hiring after meeting the minimum threshold.

In stratifying by compliance among GS 11–SES workforces, recall that only the U.S. Air Force (USAF) meets the minimum compliance threshold of 12 percent at its implementation. With the onset of the Obama executive order, there was a large increase in disability representation for the USAF—approximately 5.5 percent of the permanent workforce in 2010 increasing to 12.9 percent in 2016. This increase is largely explained by an increase in status changes as can be seen in Figure 7 Panel Bii(b).[28] For agencies not in compliance at the GS 11–SES level, gains to representation were largely made after the Obama executive order. With the onset of the Obama executive order, there was a significant increase ($p = 0.0001$) in status changes—annual contributions increase from 0.41 percentage points to 0.68 percentage points. This trend continues, and with the EEOC mandate there is little change in contributions from status changes. While there a limited sample for agencies above the 12-percent minimum, it is clear from agencies below the minimum that status changes are the driver in agencies attaining representation at the GS 11–SES level.

5 Conclusion

Since 2000 there have been efforts to increase the representation of people with disabilities. We follow two specific policy innovations—the 2010 executive order issued by President Obama and the 2017 EEOC mandate that established a 12-percent representation quota broadly, and a 2-percent quota in a subset of targeted disabilities—and describe the associated changes in disability representation in the U.S. federal workforce.

In the years between the Obama executive order and the initiation of the EEOC mandate, disability rates at federal agencies increased by 3.16 percentage points (39.5 percent) for GS 1–10 and 2.21 percentage points (38.9 percent) for GS 11–SES relative to disability rates among workers in the ACS. However, the growing gap between federal agencies and ACS representation attenuates somewhat with the initiation of the EEOC mandate in early 2017, with declines

[28] The USAF implemented a widespread workforce status update (e.g.,"We are asking all employees to review and, if appropriate, update their disability code").

driven by those agencies that learned (for the first time) that they were in compliance with the newly articulated objectives. Broadly, we find the mechanisms for carrying out this increase in disability representation are different across the pay scale. While hiring accounts for 82.0 percent of the gains in representation among the GS 1–10 workforce from 2010 to 2023, growth in the GS 11–SES workforce is dominated by status changes—71.9 percent of gains are attributable to existing workers updating their official disability status. We find that an increase in unlisted disabilities—by this we mean those inducing workers to select "Disability (not listed)" in completing Form SF-256—was instrumental to achieving representation, broadly, while "Hearing loss" significantly increased representation for the targeted disability group.

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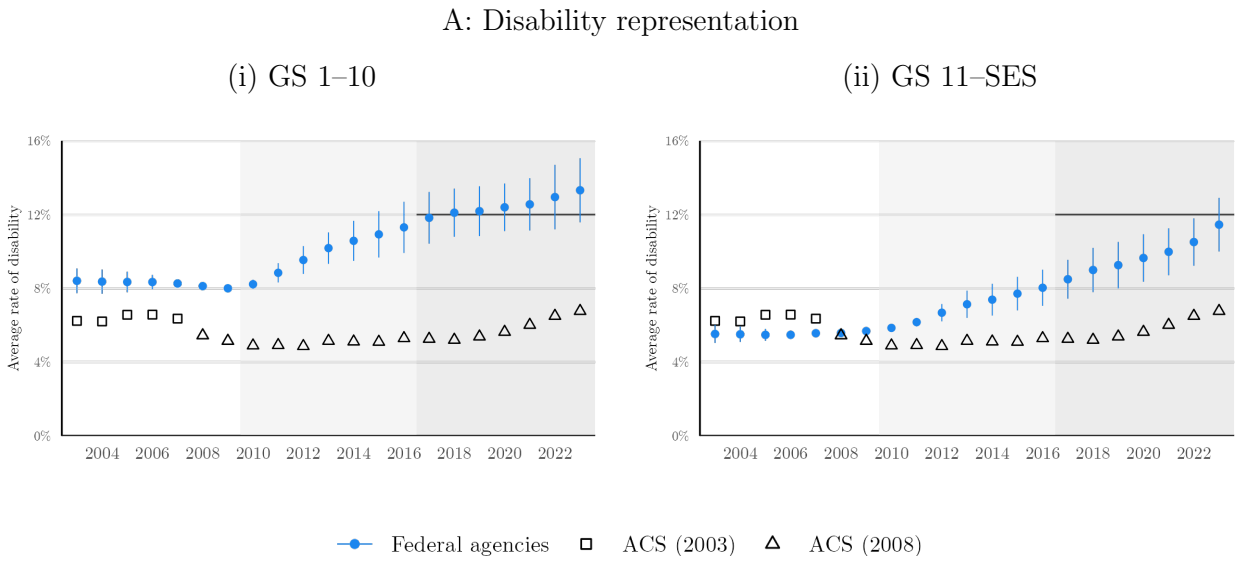
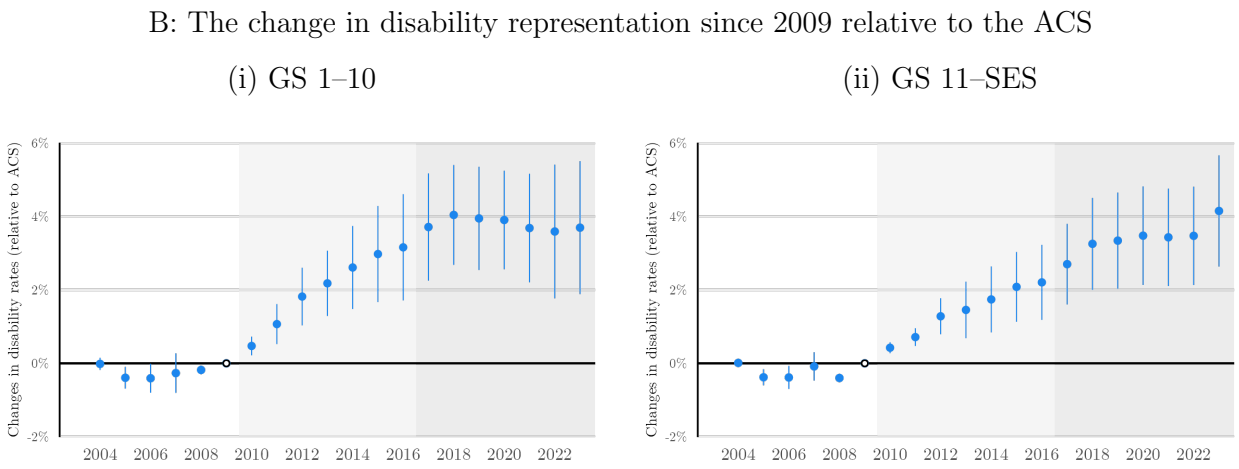
Figures

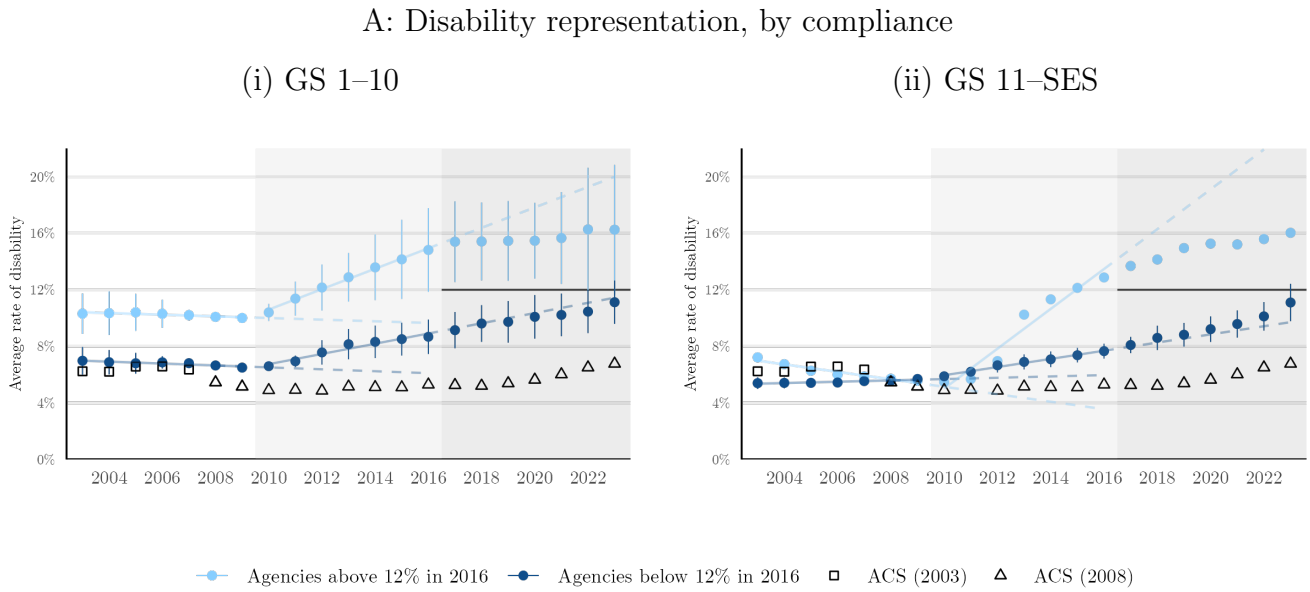
Figure 1: Disability representation across federal agencies and the ACS

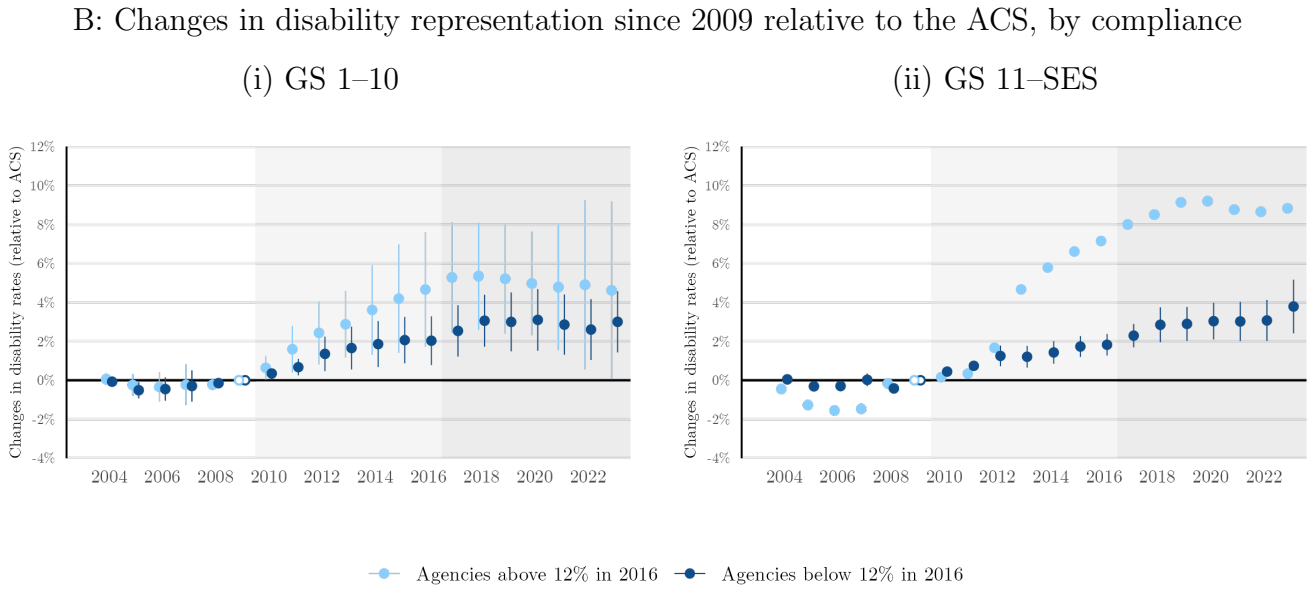




Notes: In all panels, the gray shaded regions represent the periods corresponding to the 2010 Obama executive order (light gray) and the 2017 EEOC mandate (dark gray). In Panel A we report the year fixed effects from models (separately for GS 1–10 and GS 11–SES) of disability rates among permanent workers at the 14 largest federal agencies which represent 92 percent of the federal workforce. Disability rates are regressed on year fixed effects, using 2009 as the reference year, with 95% confidence intervals allowing for clustering at the agency level. For context, we also provide estimates of disability among the employed population aged 18–64 from the American Community Survey. (In 2008, the American Community Survey changed how disability was measured and reported—we notate this as "ACS (2003)" and "ACS (2008)".) In Panel A we also identify (with a solid line) the 12-percent threshold implemented by the 2017 EEOC mandate. In Panel B we report event-study estimates, normalizing the difference between the disability across federal agencies and the ACS to zero in 2009 (with 95% confidence intervals allowing for clustering at the unit level).

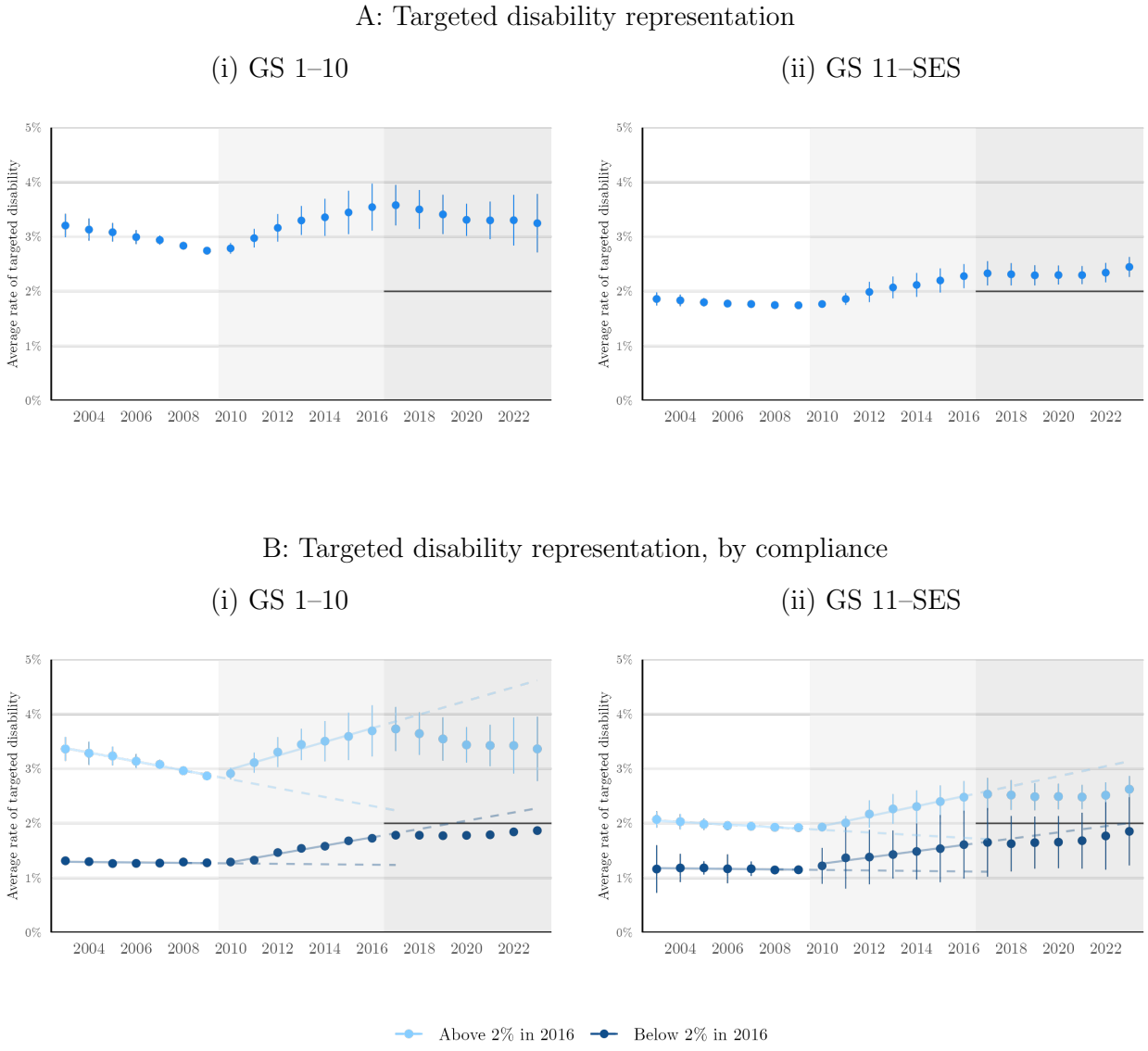
Figure 2: Were changes in disability representation following the 2017 EEOC mandate different for agencies already in compliance?





Notes: In Panel A we stratify agencies by whether they satisfied the 12-percent quota when it was enacted in 2017 and report the year fixed effects from models (separately for GS 1–10 and GS 11–SES) of disability rates at the 14 largest federal agencies which represent 92 percent of the federal workforce. Disability rates are regressed on year fixed effects, using 2009 as the reference year, with 95% confidence intervals allowing for clustering at the agency level. Additionally, we plot trendlines for the 2003 to 2009 and 2010 to 2016 time periods. For context, we also provide estimates of disability among the employed population aged 18–64 from the American Community Survey. In Panel B we report event-study estimates, normalizing the difference between the disability across federal agencies and the ACS to zero in 2009 (with 95% confidence intervals allowing for clustering at the unit level). In Panel B(ii) there is only one agency above the 12-percent threshold for the GS 11–SES (i.e., U.S. Air Force). Thus, there are no error bars provided.

Figure 3: Targeted disability representation across federal agencies



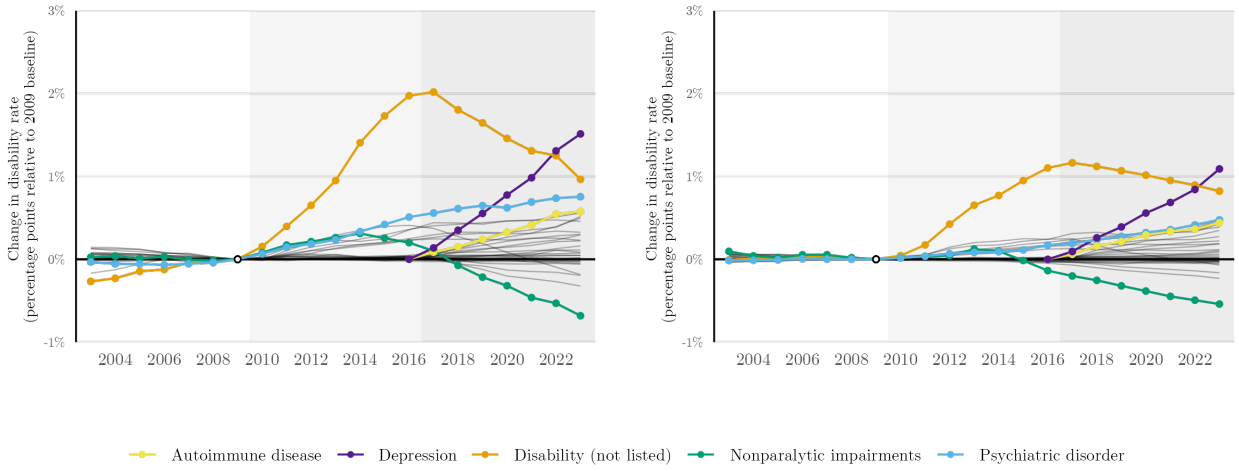
Notes: In Panel A we report the year fixed effects from models (separately for GS 1–10 and GS 11–SES) of targeted disability rates among permanent workers at the 14 largest federal agencies which represent 92 percent of the federal workforce. Targeted disability rates are regressed on year fixed effects, using 2009 as the reference year, with 95% confidence intervals allowing for clustering at the agency level. In Panel B we stratify agencies by whether they satisfied the two-percent quota when it was enacted in 2017 and report the year fixed effects from models (separately for GS 1–10 and GS 11–SES) of targeted disability rates. In Panel B(i) there is only one agency below the 2-percent threshold for the GS 1–10 (i.e., Department of Justice). Thus, there are no error bars provided.

Figure 4: Changes in representation across federal agencies relative to 2009, by disability

A: Changes in disability representation relative to 2009 — GS 1–10

(i) Agencies above 12% in 2016

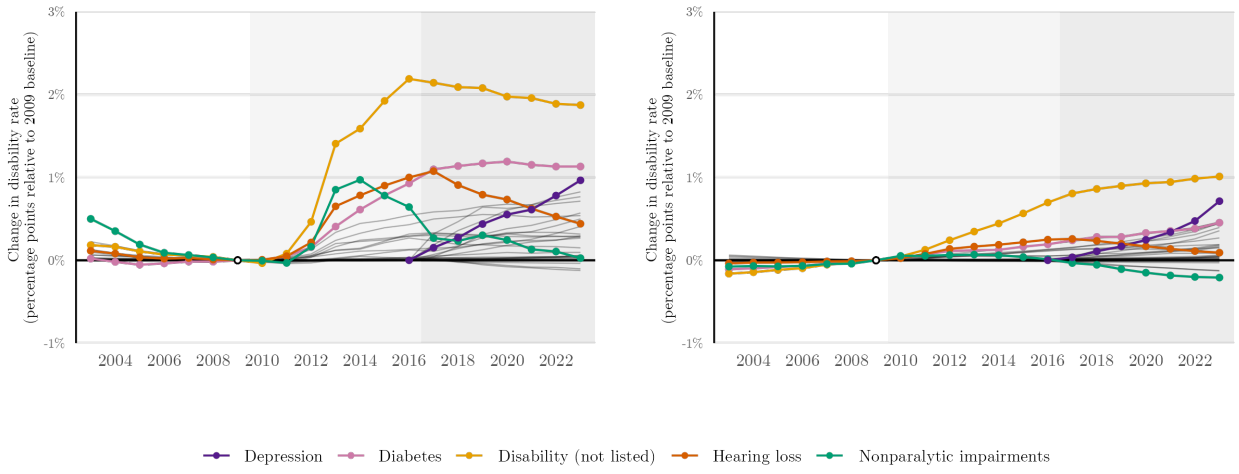
(ii) Agencies below 12% in 2016



B: Changes in disability representation relative to 2009 — GS 11–SES

(i) Agency above 12% in 2016

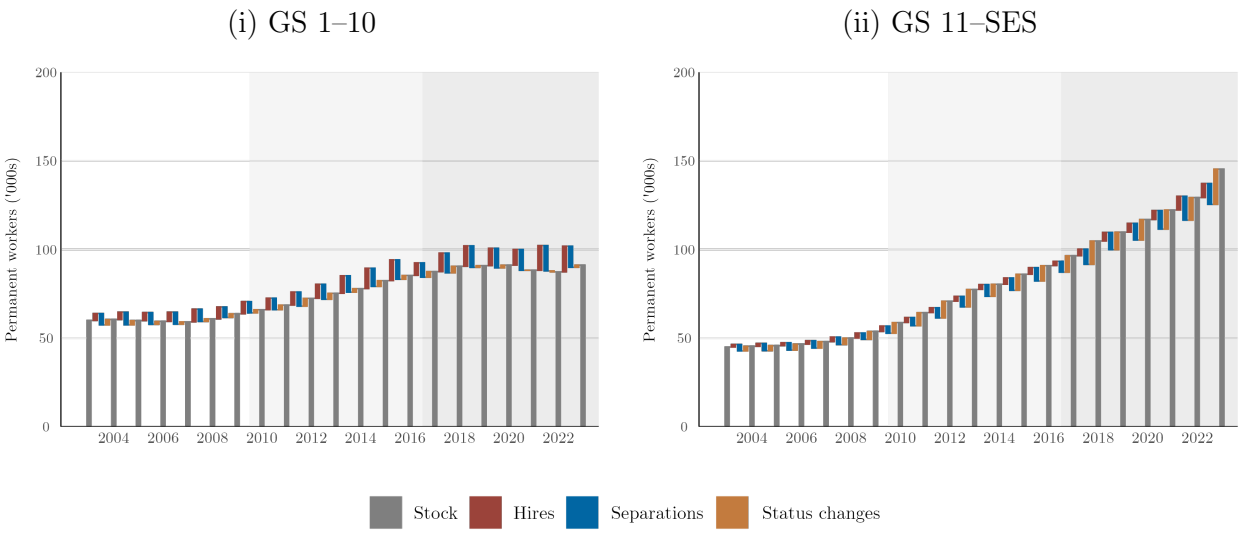
(ii) Agencies below 12% in 2016



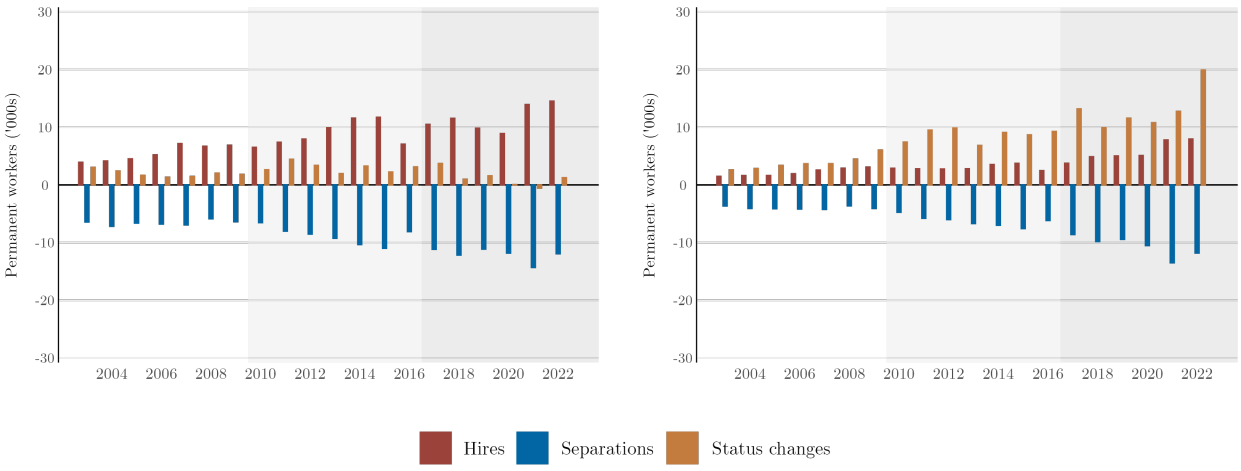
Notes: In this figure we plot disability-specific changes in disability rates over time for each disability in Table 1 Column (3). Specifically, for each disability we plot coefficients from models regressing disability rates on year fixed effects, using 2009 as the reference year (i.e., the year prior to the Obama Executive Order). (For disability categories that were added to SF-256 after 2009, we use the first year of availability as the reference year.) We identify five disability categories that show the greatest absolute change (in percentage points, separately for GS 1–10 and GS 11–SES). In Panel B(i) there is only one agency above the 12-percent threshold for the GS 11–SES (i.e., U.S. Air Force).

Figure 5: How do hires, separations, and status changes influence the federal workforce change over time?

A: The stock of permanent federal workers with disabilities and contributions from hires, separations, and status changes

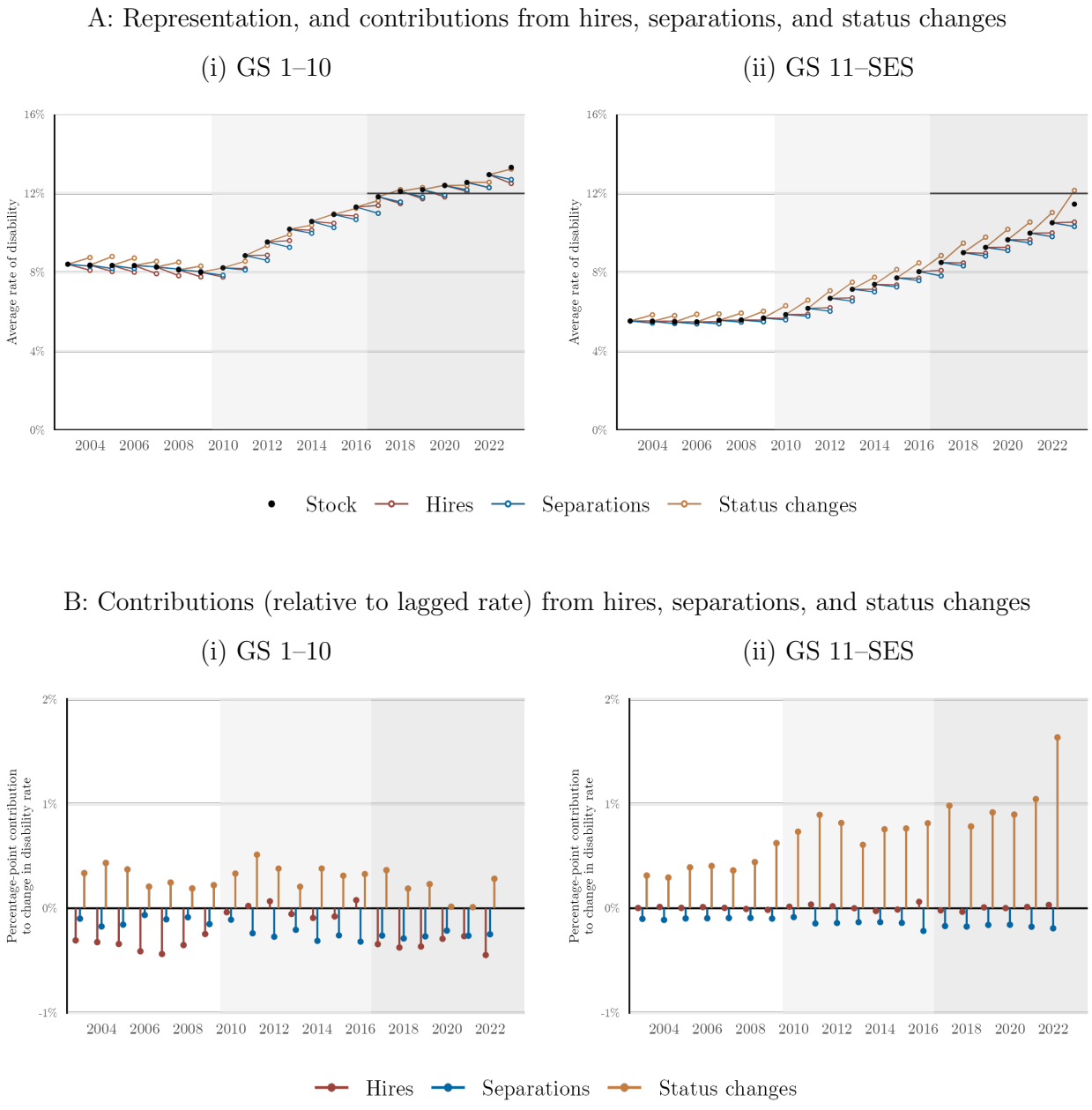


B: Contributions from hires, separations, and status changes



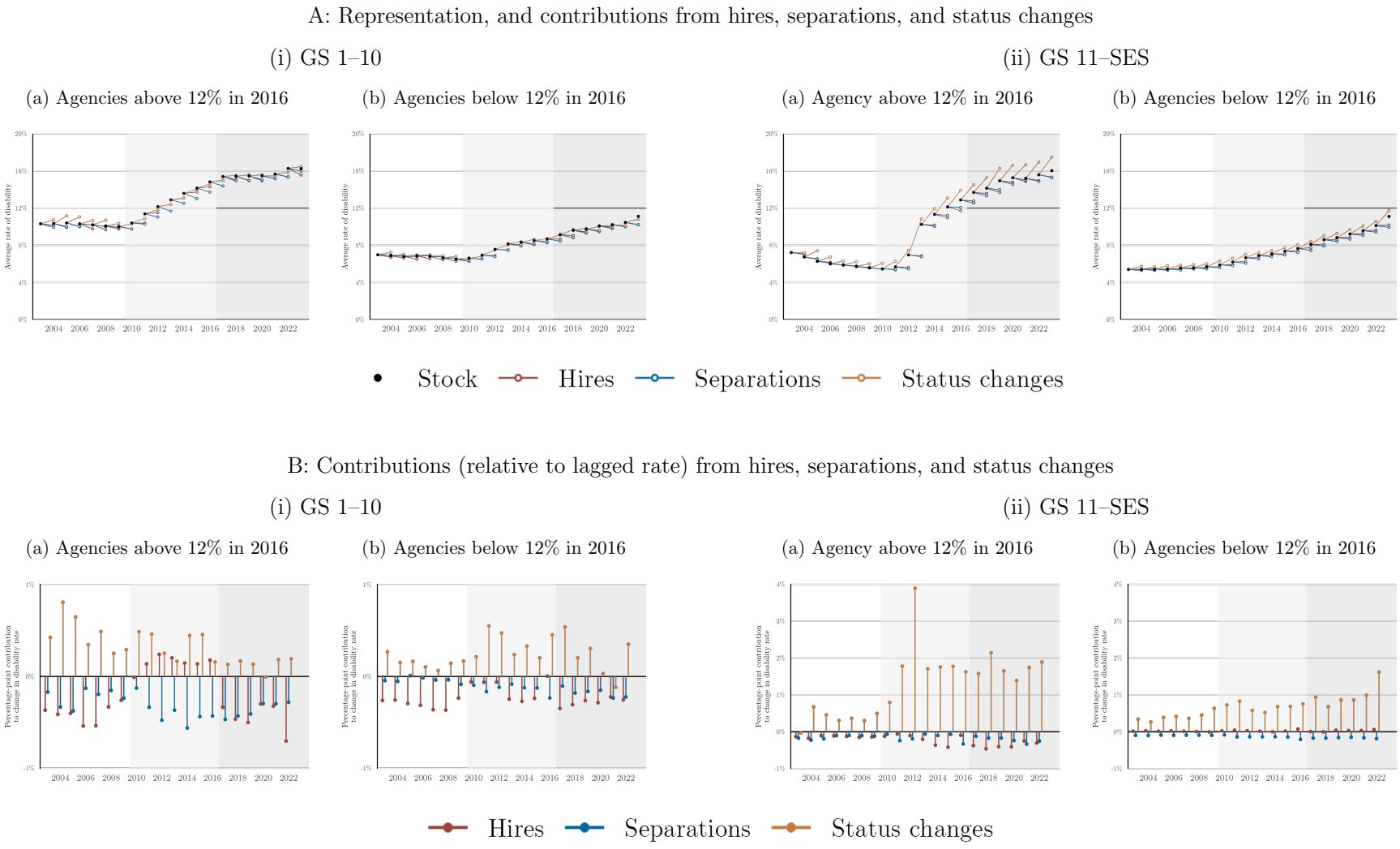
Notes: In Panel A we plot a waterfall chart illustrating the changes in the count of workers with a disability, across all 14 agencies from 2003 to 2023. Each gray bar represents the stock, with red bars indicating increases in the stock through hiring, blue bars indicating decreases in the stock through separations, and yellow bars indicating status changes. In Panel B we remove the stock from each year, highlighting the contributions from hires, separations and status changes across time.

Figure 6: How would unilateral contributions from hires, separations, and status changes have changed disability representation at the average agency?



Notes: In Panel A we plot disability representation and the unilateral contributions from hires, separations, and status changes across time. Specifically, we plot coefficients from models that separately regress disability representation, hires, separations, and status changes on year fixed effects. In Panel B we remove the overall rate from each year, highlighting the contributions from hires, separations and status changes across time.

Figure 7: Were contributions to representation different at agencies that already satisfied the 2017 EEOC criterion in 2016?



Notes: In Panel A we plot disability representation and the unilateral contributions from hires, separations, and status changes across time by 2016-compliance. Specifically, we plot coefficients from models that separately regress disability representation, hires, separations, and status changes on year fixed effects. In Panel B we remove the overall rate from each year, highlighting the contributions from hires, separations and status changes across time. In Panel B(ii)(a) there is only one agency above the 12-percent threshold for the GS 11–SES (i.e., U.S. Air Force).

Table 1: SF-256 disability self-identification options, by time period

1987-2009	2010-2016	2017-Present
01 Not identified	01 Not identified	01 Not identified
05 No disability	05 No disability	05 No disability
06 Disability (not listed)	06 Disability (not listed)	06 Disability (not listed)
13 Speech impairment	13 Speech impairment	13 Speech impairment
15 Hard of hearing	15 Hard of hearing	**19 Hearing loss**
16 Deaf in one ear	**18 Deaf**	**19 Hearing loss**
17 Deaf in both ears	**18 Deaf**	**19 Hearing loss**
22 Tunnel vision	22 Tunnel vision	**20 Vision loss**
23 Inability to read	**21 Blind**	**20 Vision loss**
24 Blind in one eye	**21 Blind**	**20 Vision loss**
25 Blind in both eyes	**21 Blind**	**20 Vision loss**
27, 29 Missing extremities	26 Missing extremities (one hand)	**31 Missing extremities**
28, 32-38 Missing extremities	**30 Missing extremities**	**31 Missing extremities**
44-57 Nonparalytic impairment	44 Nonparalytic impairment	44 Nonparalytic impairment
61-63 Partial paralysis	61 Partial paralysis (one hand)	**60 Partial or complete paralysis**
64-68 Partial paralysis	**69 Partial paralysis**	**60 Partial or complete paralysis**
70 Complete paralysis	70 Complete paralysis (one hand)	**60 Partial or complete paralysis**
71-78 Complete paralysis	**79 Complete paralysis**	**60 Partial or complete paralysis**
80-81 Heart disease	80 Heart disease	80 Heart disease
82 Convulsive disorder	**82 Epilepsy**	**82 Epilepsy**
83 Blood disease	83 Blood disease	83 Blood disease
84 Diabetes	84 Diabetes	84 Diabetes
86 Pulmonary condition	86 Pulmonary condition	86 Pulmonary condition
87 Kidney dysfunction	87 Kidney dysfunction	87 Kidney dysfunction
88-89 Cancer	88 Cancer	88 Cancer
90 Intellectual disability	**90 Intellectual disability**	**90 Intellectual disability**
91 Mental illness	**91 Psychiatric disability**	**91 Psychiatric disability**
92 Severe distortion	**92 Dwarfism**	**92 Dwarfism**
93 Disfigurement	93 Disfigurement	**93 Disfigurement**
94 Learning disability	94 Learning disability	94 Learning disability
	40 Mobility impairment	**40 Mobility impairment**
	41 Spinal abnormalities	41 Spinal abnormalities
	51 HIV/AIDS	51 HIV/AIDS
	52 Morbid obesity	52 Morbid obesity
	95 Gastrointestinal disorder	95 Gastrointestinal disorder
	98 Alcoholism	98 Alcoholism
		02 Developmental disability
		03 Traumatic brain injury
		59 Nervous system disorder
		81 Depression
		85 Orthopedic impairment
		96 Autoimmune disorder
		97 Liver disease
		99 Endocrine disorder

Notes: In this table we provide the various codes for each self-identification option listed on the federal form SF-256. Since 1987, the form has updated the available options an individual can select. The alternating stripes between gray and white group the same disability set across time (e.g., severe distortion became dwarfism between 2009 to 2010). For clarity, we aggregate these groups into a broader grouping if there are many subgroups within a particular disability. (The shaded areas denote the different groupings.) The bolded disabilities are recognized by the federal government as targeted (or severe) disabilities. For this paper, targeted disabilities refer to any bolded disability in the "2017–Present" period. Note: full category names are shortened for conciseness.

Table 2: How do aggregate disability counts change across all federal agencies over time?

Panel A: GS 1–10

Dependent Variable:	Hires	Separations	Status changes	$\frac{\text{Hires}}{\text{Hires + Status Changes}}$
	(1)	(2)	(3)	(4)
Constant	5,499.4***	-6,596.7***	1,962.0***	0.73***
	(524.4)	(161.3)	(225.9)	(0.04)
1{2010-2016}	3,383.9***	-2,230.6***	1,047.9**	0.01
	(977.7)	(594.4)	(387.8)	(0.05)
1{2017-2023}	6,036.4***	-5,489.6***	-795.0	0.18***
	(1,054.1)	(498.6)	(637.8)	(0.06)
Observations	20	20	20	20
R^2	0.65	0.82	0.39	0.47

Panel B: GS 11–SES

Dependent Variable:	Hires	Separations	Status changes	$\frac{\text{Hires}}{\text{Hires + Status Changes}}$
	(1)	(2)	(3)	(4)
Constant	2,169.3***	-3,998.9***	3,805.7***	0.36***
	(253.1)	(95.1)	(438.8)	(0.01)
1{2010-2016}	834.6**	-2,291.0***	4,862.7***	-0.10***
	(307.7)	(360.8)	(610.0)	(0.02)
1{2017-2023}	3,578.4***	-6,615.3***	9,206.6***	-0.06**
	(738.2)	(726.0)	(1,515.6)	(0.02)
Observations	20	20	20	20
R^2	0.70	0.87	0.78	0.57

Notes: In each column we report coefficients from an OLS regression with robust standard errors in parentheses. Column (1) represents the average annual counts in hires of workers with a disability. Column (2) represents the average annual counts in separations of workers with a disability. Column (3) represents the average annual counts in status changes. Column (4) represents the average annual percentage of hires, among all hires and status changes, into disability employment.

Table 3: Unilateral contributions from hires, separations, and status changes on disability representation in federal agencies, by GS level

Panel A: GS 1–10

Dependent Variable:	Hires		Separations		Status changes	
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	-0.004***	-0.006***	-0.001*	-0.0009***	0.003***	0.006***
	(0.0006)	(0.0004)	(0.0006)	(0.0001)	(0.0008)	(0.0009)
1{2010-2016}	0.003***	0.003***	-0.001***	-0.001***	0.0006	0.0006
	(0.0007)	(0.0007)	(0.0003)	(0.0003)	(0.001)	(0.001)
1{2017-2023}	-2.9×10^{-5}	-2.9×10^{-5}	-0.001***	-0.001***	-0.001	-0.001
	(0.0008)	(0.0009)	(0.0003)	(0.0003)	(0.002)	(0.002)
Agency FE		✓		✓		✓
Observations	280	280	280	280	280	280
R^2	0.16	0.48	0.06	0.62	0.01	0.19

Panel B: GS 11–SES

Dependent Variable:	Hires		Separations		Status changes	
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	2.1×10^{-5}	-0.002***	-0.0010***	-0.001***	0.004***	0.010***
	(0.0002)	(0.0002)	(0.0002)	(5.6×10^{-5})	(0.0006)	(0.0007)
1{2010-2016}	0.0001	0.0001	-0.0004***	-0.0004***	0.004***	0.004***
	(0.0002)	(0.0002)	(7.5×10^{-5})	(7.7×10^{-5})	(0.001)	(0.001)
1{2017-2023}	-1.5×10^{-5}	-1.5×10^{-5}	-0.0007***	-0.0007***	0.006***	0.006***
	(0.0004)	(0.0005)	(0.0002)	(0.0002)	(0.001)	(0.001)
Agency FE		✓		✓		✓
Observations	280	280	280	280	280	280
R^2	0.002	0.65	0.12	0.57	0.18	0.42

Notes: In each column we report coefficients from an OLS regression with standard errors in parentheses (allowing for clustering at the agency level). The dependent variable in columns (1) and (2) is the percentage point contribution in disability representation due to hires. The dependent variable in columns (3) and (4) is the percentage point contribution in disability representation due to separations. The dependent variable in columns (5) and (6) is the percentage point contribution in disability representation due to status changes.

Table 4: Unilateral contributions from hires, separations, and status changes on disability representation in federal agencies, GS 1–10

Panel A: Above 12 percent

Dependent Variable:	Hires		Separations		Status changes	
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	-0.004**	-0.002***	-0.002	-0.002***	0.005**	0.003
	(0.001)	(0.0003)	(0.001)	(0.0002)	(0.002)	(0.002)
1{2010-2016}	0.006***	0.006***	-0.002*	-0.002*	-0.001	-0.001
	(0.0008)	(0.0008)	(0.0007)	(0.0007)	(0.002)	(0.002)
1{2017-2023}	-0.0003	-0.0003	-0.001*	-0.001*	-0.003	-0.003
	(0.001)	(0.001)	(0.0006)	(0.0007)	(0.003)	(0.003)
Agency FE		✓		✓		✓
Observations	120	120	120	120	120	120
R^2	0.28	0.54	0.05	0.57	0.06	0.16

Panel B: Below 12 percent

Dependent Variable:	Hires		Separations		Status changes	
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	-0.003***	-0.006***	-0.0004	-0.001***	0.002*	0.005***
	(0.0005)	(0.0005)	(0.0002)	(0.0002)	(0.0007)	(0.0010)
1{2010-2016}	0.002**	0.002**	-0.0010***	-0.0010***	0.002	0.002
	(0.0005)	(0.0005)	(0.0002)	(0.0002)	(0.002)	(0.002)
1{2017-2023}	0.0002	0.0002	-0.001***	-0.001***	0.0007	0.0007
	(0.001)	(0.001)	(0.0003)	(0.0003)	(0.002)	(0.002)
Agency FE		✓		✓		✓
Observations	160	160	160	160	160	160
R^2	0.06	0.54	0.15	0.48	0.02	0.24

Notes: In each column we report coefficients from an OLS regression with standard errors in parentheses (allowing for clustering at the agency level). The dependent variable in columns (1) and (2) is the percentage point contribution in disability representation due to hires. The dependent variable in columns (3) and (4) is the percentage point contribution in disability representation due to separations. The dependent variable in columns (5) and (6) is the percentage point contribution in disability representation due to status changes.

Table 5: Unilateral contributions from hires, separations, and status changes on disability representation in federal agencies, GS 11–SES

Panel A: Above 12 percent

Dependent Variable:	Hires	Separations	Status changes
	(1)	(2)	(3)
Constant	-0.001***	-0.001***	0.004***
	(9.3×10^{-5})	(0.0002)	(0.0008)
1{2010-2016}	-0.0006	-7.4×10^{-5}	0.01***
	(0.0005)	(0.0004)	(0.004)
1{2017-2023}	-0.002***	-0.0007*	0.01***
	(0.0003)	(0.0004)	(0.001)
Observations	20	20	20
R^2	0.54	0.15	0.62

Panel B: Below 12 percent

Dependent Variable:	Hires		Separations		Status changes	
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	0.0001	0.0003	-0.0009***	-0.001***	0.004***	0.004***
	(0.0002)	(0.0002)	(0.0002)	(6×10^{-5})	(0.0006)	(0.0005)
1{2010-2016}	0.0002	0.0002	-0.0005***	-0.0005***	0.003***	0.003***
	(0.0002)	(0.0002)	(7.5×10^{-5})	(7.7×10^{-5})	(0.0005)	(0.0005)
1{2017-2023}	0.0002	0.0002	-0.0007***	-0.0007***	0.006***	0.006***
	(0.0004)	(0.0005)	(0.0002)	(0.0002)	(0.001)	(0.001)
Agency FE		✓		✓		✓
Observations	260	260	260	260	260	260
R^2	0.003	0.62	0.13	0.60	0.18	0.39

Notes: In each column we report coefficients from regressions similar to Table 4, stratified by 2016-compliance. In Panel A there is only one agency above the 12-percent threshold for the GS 11–SES (i.e., U.S. Air Force).

Appendix

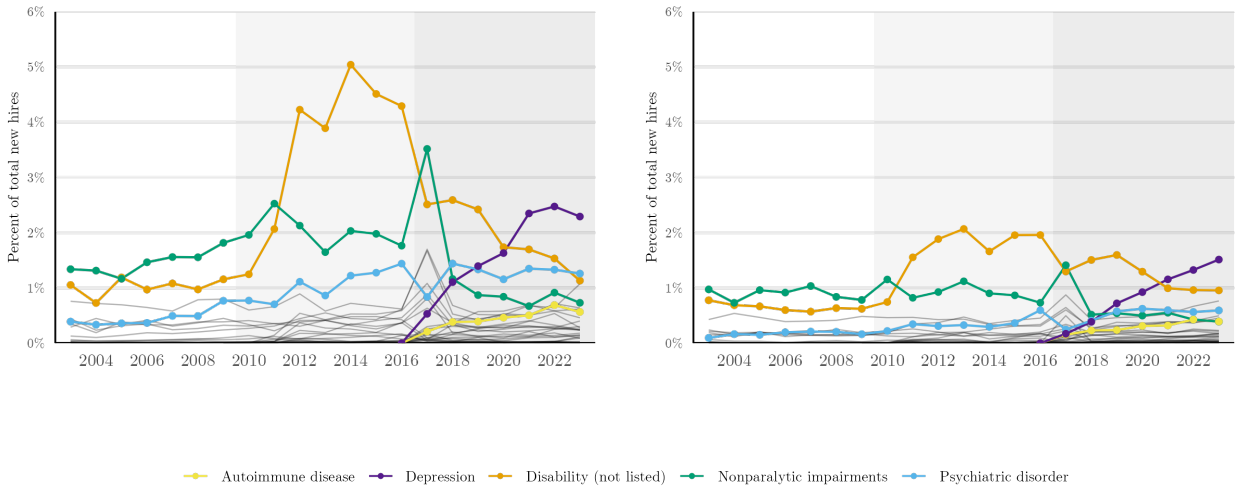
A Supplementary figures

Figure 8: Disability categories, as fractions of total new hires

A: GS 1–10

(i) Agencies above 12% in 2016

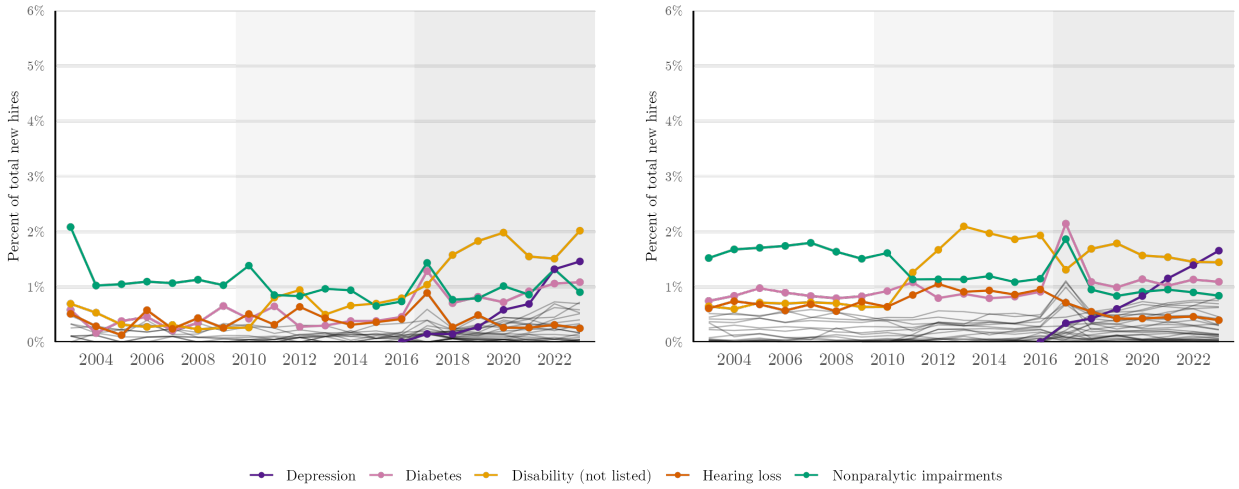
(ii) Agencies below 12% in 2016



B: GS 11–SES

(i) Agency above 12% in 2016 (i.e., USAF)

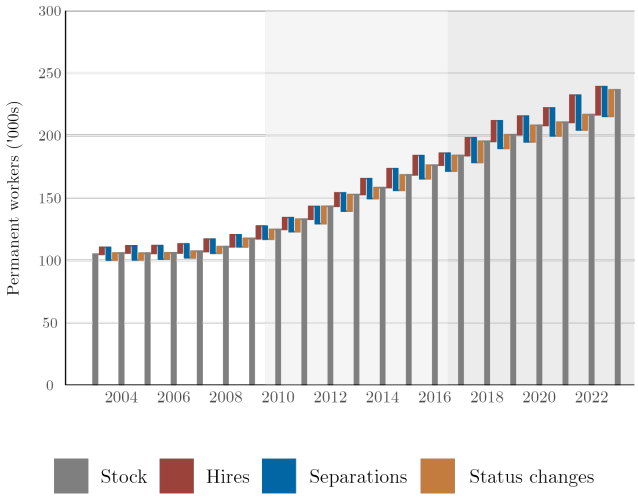
(ii) Agencies below 12% in 2016



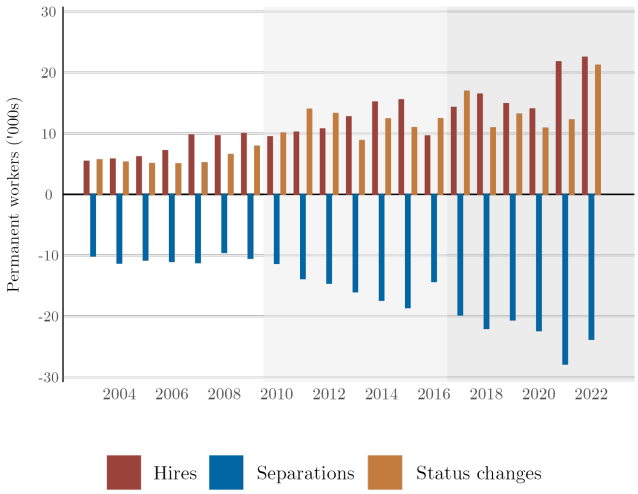
Notes: In this figure we plot disability-specific changes in disability rates over time for each disability in Table 1 Column (3). Specifically, for each disability we plot coefficients from models regressing disability rates on year fixed effects, using 2009 as the reference year (i.e., the year prior to the Obama Executive Order). (For disability categories that were added to SF-256 after 2009, we use the first year of availability as the reference year.) We identify five disability categories that show the greatest absolute change (in percentage points, separately for GS 1–10 and GS 11–SES). In Panel B(i) there is only one agency above the 12-percent threshold for the GS 11–SES (i.e., U.S. Air Force).

Figure 9: How do hires, separations, and status changes influence the federal workforce change over time, aggregated across GS level

A: The stock of permanent federal workers with disabilities and contributions from hires, separations, and status changes

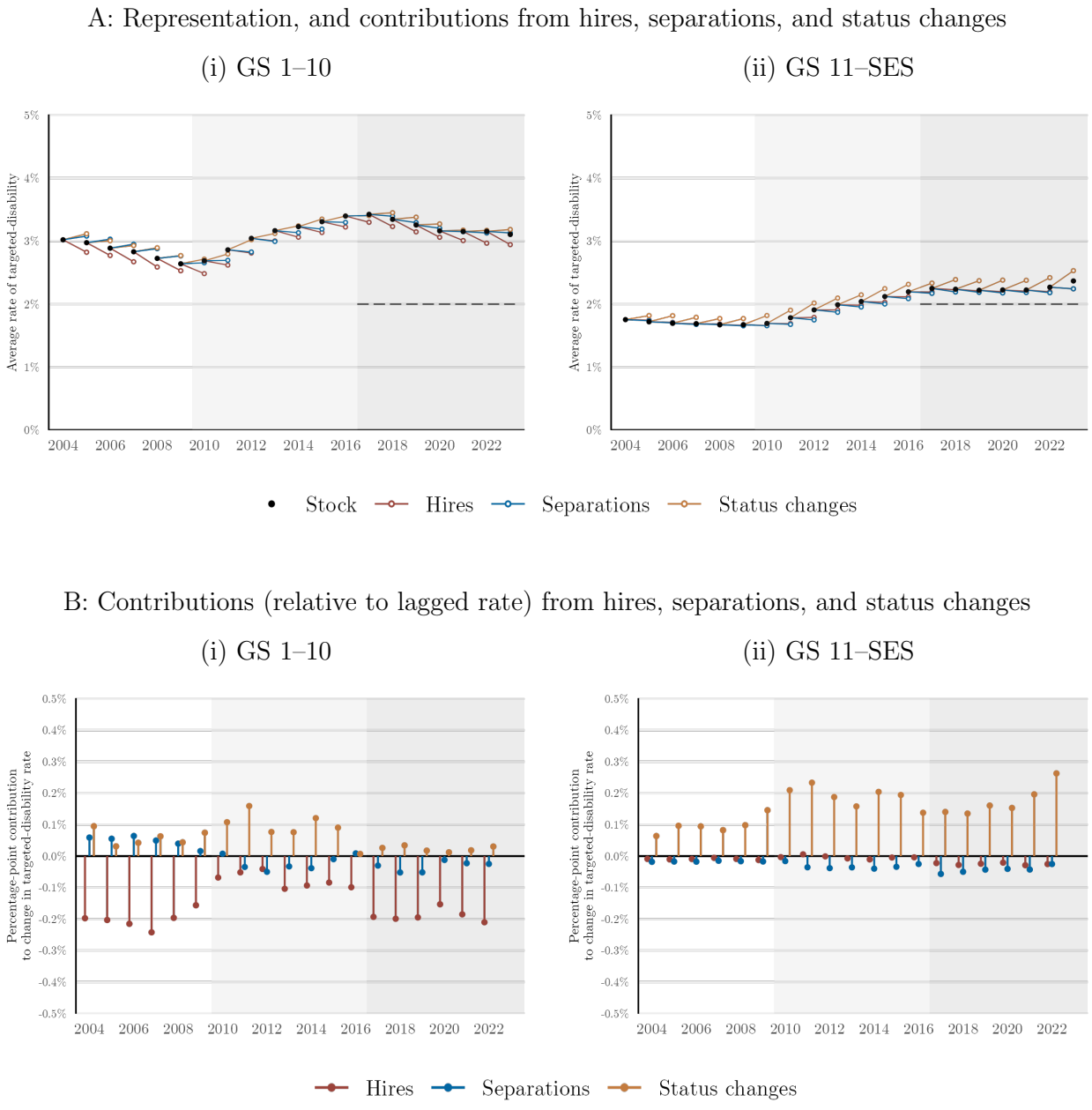


B: Contributions from hires, separations, and status changes



Notes: In Panel A we plot a waterfall chart illustrating the changes in the count of workers with a disability, across all 14 agencies from 2003 to 2023. Each gray bar represents the stock, with red bars indicating increases in the stock through hiring, blue bars indicating decreases in the stock through separations, and yellow bars indicating status changes. In Panel B we remove the stock from each year, highlighting the contributions from hires, separations and status changes across time.

Figure 10: How would unilateral contributions from hires, separations, and status changes have changed targeted disability representation at the average agency?



Notes: In Panel A we plot targeted disability representation and the unilateral contributions from hires, separations, and status changes across time. Specifically, we plot coefficients from models that separately regress targeted disability representation, hires, separations, and status changes on year fixed effects. In Panel B we remove the overall rate from each year, highlighting the contributions from hires, separations and status changes across time.