



November 2022

# CHINA

## Efforts Underway to Address Technology Transfer Risk at U.S. Universities, but ICE Could Improve Related Data

## Why GAO Did This Study

The federal government spends billions of dollars each year on research conducted at U.S. universities. Foreign students and scholars contribute to this research. For example, about 723,000 Chinese nationals participated in graduate-level STEM programs from 2016 through 2020. Recent reports have noted the importance of, and challenges in, combating undue foreign influence, particularly from the PRC, while maintaining an open research environment.

GAO was asked to review agency efforts to counter PRC attempts to transfer federally funded research from U.S. universities. This report (1) assesses the extent to which agencies have identified and collected data related to characteristics of foreign students and scholars in the United States that may indicate risk of transferring university technology and (2) describes selected agency efforts to counter such transfers for the benefit of PRC-affiliated entities. For 2016 through 2020, the most recent years for which data were available, GAO analyzed ICE and State data and investigations information from the five agencies that provide the most federal funding for university research. GAO also reviewed relevant policies and interviewed agency officials.

## What GAO Recommends

GAO is making two recommendations to ICE to establish milestones for a required assessment and improve data related to factors that may indicate risk of technology transfer. ICE concurred with the recommendations.

View [GAO-23-106114](#). For more information, contact Kimberly Gianopoulos at (202) 512-8612 or [gianopulosk@gao.gov](mailto:gianopulosk@gao.gov).

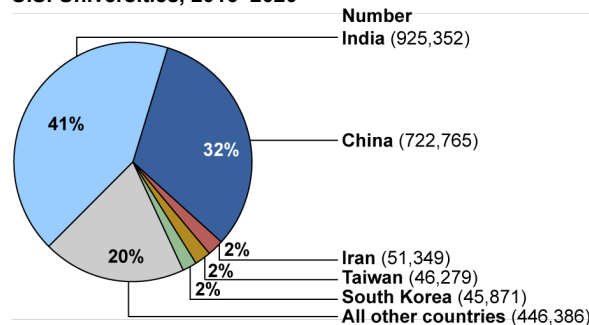
## CHINA

### Efforts Underway to Address Technology Transfer Risk at U.S. Universities, but ICE Could Improve Related Data

## What GAO Found

U.S. Immigration and Customs Enforcement (ICE) has incomplete data that may indicate whether foreign students and scholars pose risks for transferring technology from U.S. universities to foreign entities. ICE's foreign student and scholar database contains data on the number of graduate students from countries of concern for technology transfer, such as the People's Republic of China (PRC). Graduate students studying in a science, technology, engineering, and math (STEM) field have also been identified as more likely to be involved in sensitive research (see fig.). However, ICE has not established milestones to complete a required assessment of whether it needs to modify its database to collect additional data related to some risk factors, in part because it has focused available resources on other priorities. Further, information related to students' employment in the U.S., which may indicate whether they have access to technology, is incomplete. Completing the assessment and improving student employment data could strengthen U.S. government efforts to identify and assess technology transfer risk.

**Foreign Graduate Students Studying Science, Technology, Engineering, and Math Fields at U.S. Universities, 2016–2020**



Source: GAO analysis of Student and Exchange Visitor Information System (SEVIS) data. | GAO-23-106114

To safeguard university research from transfer for the benefit of the PRC and other countries, U.S. agencies that fund research increased investigations of researchers for fraud and failures to disclose potential sources of foreign influence, according to agency data. These investigations have resulted in the removal of individuals from research positions because of undisclosed affiliations, such as receiving funding from a PRC-affiliated institution. While agency officials acknowledged concerns related to racial bias in their investigations involving China, they emphasized that no decisions are based on individual characteristics such as nationality or visa status. Officials also noted that the subjects of investigations were more likely to be permanent university employees than visiting foreign students and scholars.

This is a public version of a sensitive report GAO issued in August 2022. Information on the results of the Department of State's process for adjudicating visa applications for students and scholars who may pose a risk of transferring university research, the PRC's talent recruitment and scholarship programs, ICE enforcement efforts, and detailed investigations data that State, ICE, and the Department of Defense deemed sensitive has been omitted from this report.

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## Abbreviations

CPT	curricular practical training
DHS	Department of Homeland Security
DOD	Department of Defense
DOE	Department of Energy
DOJ	Department of Justice
ECA	Bureau of Educational and Cultural Affairs
FBI	Federal Bureau of Investigation
HHS	Department of Health and Human Services
ICE	U.S. Immigration and Customs Enforcement
NASA	National Aeronautics and Space Administration
NIH	National Institutes of Health
NSD	National Security Division
NSF	National Science Foundation
OIG	Office of Inspector General
OPT	optional practical training
PRC	People's Republic of China
SEVIS	Student and Exchange Visitor Information System
SEVP	Student and Exchange Visitor Program
STEM	science, technology, engineering, and math

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November 15, 2022

### Congressional Requesters

Each year, hundreds of thousands of foreign students and scholars in the science, technology, engineering, and math (STEM) fields apply for nonimmigrant visas to travel to the United States and participate in education and exchange programs. These students and scholars offer our country diversity, boost our economy, and are an important source of the knowledge that drives U.S. innovation and research, including some research funded by federal agencies. The open and collaborative nature of the U.S. research and development enterprise, including collaboration with foreign researchers, underpins America's innovation, science and technology leadership, economic competitiveness, and national security. Notwithstanding these benefits, the United States also has important national security interests in protecting the federally funded research to which such visitors contribute or may have access. In particular, the government of the People's Republic of China (PRC)<sup>1</sup> has publicly stated its intent to acquire foreign technology as a key element of its strategy for international competitiveness.<sup>2</sup> U.S. officials have noted concern that billions of dollars of federally funded U.S. university research may be at risk of transfer to benefit the PRC's economic and national security.<sup>3</sup>

The Departments of Homeland Security (DHS) and State each oversee programs through which foreign visitors study and conduct research at U.S. universities. DHS's U.S. Immigration and Customs Enforcement (ICE) is responsible for managing the Student and Exchange Visitor Program (SEVP), which certifies schools authorized to enroll foreign

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<sup>1</sup>We generally use PRC when referring to the Chinese government or entities affiliated with it.

<sup>2</sup>U.S. House of Representatives China Task Force, *China Task Force Report* (Sept. 30, 2020).

<sup>3</sup>For the purposes of this report, we define technology transfers as licit or illicit transfers to foreign nationals of regulated or unregulated U.S.-developed information, technology, or data that have national security implications. The term sensitive technology transfers is not used in the International Traffic in Arms Regulations or Export Administration Regulations. Our review encompassed efforts to safeguard research of various kinds and at various stages in the development process, including basic or fundamental research as well as later-stage research and development efforts resulting in finished products that can be referred to as "technology."

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students in academic programs and oversees such schools and students.<sup>4</sup> State's Bureau of Educational and Cultural Affairs (ECA) is responsible for the Exchange Visitor Program, in which U.S. sponsors select foreign nationals who participate in exchange visitor programs if they meet the criteria for certain categories. These categories range from students, teachers, and research scholars to au pairs, camp counselors, and professors, among others.

State officials identified two main types of visas applicable to foreign students and scholars who may have access to U.S. university research:<sup>5</sup> (1) foreign students overseen by ICE's SEVP, admitted to the United States on F-1 visas; and (2) foreign students and scholars overseen by State/ECA's Exchange Visitor Program, admitted to the United States on J-1 visas.<sup>6</sup> In addition to State/ECA's role in working with sponsors to identify and select exchange visitors for exchange programs, State's Bureau of Consular Affairs also adjudicates all visa applicants, including

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<sup>4</sup>SEVP-certified schools span all education levels from kindergarten to secondary education, as well as postsecondary academic, vocational, English language, and flight schools. SEVP certifies schools for the enrollment of certain nonimmigrants who come to the United States on a temporary basis to engage in an approved course of study. These foreign students pursue academic studies at a college, university, or other academic institution, or in an accredited language-training program. 8 U.S.C. § 1101(a)(15)(F); 8 C.F.R. § 214.2(f).

<sup>5</sup>We use "visas" to refer to nonimmigrant visas. Nonimmigrant visas are visas issued to foreign nationals seeking temporary admission into the United States under a specific nonimmigrant category (8 U.S.C. § 1101(a)(15); 8 C.F.R. § 214.1(a)(1)-(2)), for an authorized period of stay delineated by a particular time frame or duration of status (i.e., admission for the time span of a specific program or activity, which may be variable). Immigrant visas, which are not addressed in this report, are issued to eligible foreign nationals who are seeking lawful permanent resident status in the United States with a path to citizenship. See 8 U.S.C. § 1101(a)(16). This report also does not address individuals who are allowed to seek admission without a visa, such as citizens of Canada, as well as participants in the Visa Waiver Program, through which nationals of certain countries may apply for admission to the United States as temporary visitors for business or pleasure without first obtaining a visa from a U.S. embassy or consulate abroad. See 8 U.S.C. § 1187; 8 C.F.R. §§ 212.1, 214.6(d), 217.1-217.7; 22 C.F.R. §§ 41.0-41.3. We also excluded nonimmigrant visas for dependents (e.g., spouse, child, or personal employee), such as the spouse or minor children (F-2) of an academic student (F-1).

<sup>6</sup>We use "students and scholars" to identify the population of F-1 and certain J-1 visa holders whom agency officials identified as most likely to have access to U.S. university research.

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for students and scholars.<sup>7</sup> In this role, the bureau manages the visa application process, the consular officer corps, and the corps' functions at more than 220 visa-issuing posts overseas, including four in China: the U.S. Embassy in Beijing and three U.S. consulates in Shenyang, Guangzhou, and Shanghai.

To reduce the risk of technology transfer, federal agencies funding university research are developing procedures to help ensure that potential grant recipients' conflicts of interest and of commitment—which could result in the transfer of federally funded research—are disclosed and considered prior to pledging funds.<sup>8</sup> In addition, law enforcement agencies such as the Federal Bureau of Investigation (FBI) and other components of the Department of Justice (DOJ) are responsible for enforcing civil and criminal laws, such as those related to espionage and technology transfer.<sup>9</sup> In particular, DOJ's National Security Division (NSD) is responsible for enforcing all criminal laws relating to subversive activities and other offenses that threaten U.S. security, including laws relating to espionage and export controls. Additionally, NSD was assigned leadership of DOJ's China Initiative, aimed at identifying and

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<sup>7</sup>For more information about the nonimmigrant visa process and adjudication of student and exchange visitors, as well as other types of nonimmigrant visa applicants, see GAO, *Nonimmigrant Visas: Outcomes of Applications and Changes in Response to 2017 Executive Actions*, [GAO-18-608](#) (Washington, D.C.: Aug. 7, 2018).

<sup>8</sup>In December 2020, we reported on U.S. grant-making agencies' conflict of interest policies and disclosure requirements. In that report, we found that several agencies did not address non-financial conflicts of interest in their policies. We noted that including these in their policies would provide funding agencies with additional information to assess the risk of foreign influence. We also made recommendations related to government-wide information needed to help agencies address the threats of foreign influence in federally funded research and steps agencies can take to help identify potential conflicts of interest and consistently apply related enforcement actions. GAO, *Federal Research: Agencies Need to Enhance Policies to Address Foreign Influence*, [GAO-21-130](#) (Washington, D.C.: Dec. 17, 2020).

<sup>9</sup>The U.S. government implements export controls to manage risks associated with exporting sensitive items while ensuring that legitimate trade can still occur, and to advance U.S. national security and foreign policy objectives. These export controls are governed by a set of laws, regulations, and processes that multiple federal agencies administer to ensure compliance. The Departments of Commerce, Energy, Homeland Security, Justice, State, and the Treasury, along with other U.S. federal agencies, each play a role in the implementation and enforcement of the U.S. export control system. See GAO, *Export Controls: State and Commerce Should Improve Guidance and Outreach to Address University-Specific Compliance Issues*, [GAO-20-394](#) (Washington, D.C.: May 12, 2020); and GAO, *Export Controls: Enforcement Agencies Should Better Leverage Information to Target Efforts Involving U.S. Universities*, [GAO-22-105727](#) (Washington, D.C.: June 14, 2022).



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prosecuting trade secret theft, hacking, and economic espionage for the benefit of the PRC.<sup>10</sup>

You asked us to review agency efforts to counter PRC attempts to transfer technology from U.S. universities. This report is a public version of a sensitive report that we issued on August 2, 2022.<sup>11</sup> Our August report contained three objectives, including one on the results of State's process for adjudicating visa applications for students and scholars who may pose a risk of transferring university research. State deemed information related to that objective to be sensitive, which must be protected from public disclosure. Consequently, this public version only includes information on objective (1), which assesses the extent to which agencies have identified and collected data related to characteristics of foreign students and scholars in the United States that may indicate risk of transferring university technology, and objective (2), which describes selected agency efforts to counter the transfer of federally funded university research for the benefit of PRC-affiliated entities.<sup>12</sup>

To assess the extent to which agencies have identified and collected data related to characteristics of foreign students and scholars in the United States that may indicate risk of transferring university technology, we reviewed prior GAO reports and agency documents that identified these risks. We also analyzed data related to these characteristics that may indicate risk for technology transfer by F-1 and J-1 students and J-1 scholars active in the United States from calendar years 2016 through

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<sup>10</sup>Established in November 2018 and discontinued in February 2022, the China Initiative reflected DOJ's strategic priority of countering PRC-related national security threats. DOJ officials explained that academia was identified as one of the most vulnerable sectors of the U.S. economy because its tradition of openness, and the importance of international exchanges to the free flow of ideas, leave it vulnerable to PRC exploitation. The initiative generally aimed to identify priority PRC-related trade theft cases and ensure sufficient resources were dedicated to bring those cases to an appropriate conclusion quickly and effectively, according to the archived DOJ website. It included a goal to educate colleges and universities about potential threats to academic freedom and open discourse.

<sup>11</sup>GAO, *China: Efforts Underway to Address Technology Transfer Risk at U.S. Universities, but ICE Could Improve Related Data*, GAO-22-104362SU (Washington, D.C.: Aug. 2, 2022).

<sup>12</sup>This public report also omits certain information that DHS, DOD, and State deemed to be sensitive related to (1) ICE enforcement efforts, (2) the number of investigations conducted by the five largest grant-making agencies related to safeguarding research funds awarded to U.S. universities, and (3) the PRC's talent recruitment and scholarship programs. Although this report provides more limited information on these topics, it uses the same methodology as the sensitive report.

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2020, the most recent data available at the time of our request.<sup>13</sup> ICE and State maintain these data in the Student and Exchange Visitor Information System (SEVIS) database. We assessed these data against ICE requirements and federal internal control standards on data quality and interviewed agency officials about SEVIS.<sup>14</sup> We determined that F-1 and J-1 student and J-1 scholar data from SEVIS were sufficiently reliable for the purposes of describing country of citizenship, level of education, type of exchange program, and certain characteristics of student employment.

Our analysis of student and scholar data includes applicants for F-1 visas and applicants for J-1 visas in subcategories for post-secondary students and “foreign scholars.”<sup>15</sup> We excluded foreign students visiting with M-1 visas, which are issued for vocational and other nonacademic studies, because we identified no more than one record per year in the SEVIS data for 2016 through 2020 with an M-1 visa at the associate, bachelor’s, master’s, or doctoral level of education.

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<sup>13</sup>Only schools certified by ICE’s SEVP can enroll foreign students traveling to the United States on F-1 visas, and only State-designated sponsors are authorized to support exchange visitors (J-1 visa). For our reporting on foreign students, scholars, and visa adjudications, we use “universities” to identify these SEVP-certified schools (F-1 students) and accredited, post-secondary institutions (J-1 students and scholars). “Universities” includes both universities and colleges.

<sup>14</sup>GAO, *Standards for Internal Control in the Federal Government*, [GAO-14-704G](#) (Washington, D.C.: September 2014).

<sup>15</sup>F-1 visas are generally available to nonimmigrants having a residence in a foreign country that they have no intention of abandoning, who are bona fide students qualified to pursue a full course of study and who seek to enter the United States temporarily and solely for the purpose of pursuing such a course of study at an established college, university, seminary, conservatory, academic high school, elementary school, or other academic institution or in an accredited language training program in the United States. 8 U.S.C. § 1101(a)(15)(F); 8 C.F.R. § 214.2(f). J-1 visas are generally available to nonimmigrants having a residence in a foreign country that they have no intention of abandoning who, are bona fide students, scholars, trainees, teachers, professors, research assistants, specialists, or leaders in a field of specialized knowledge or skill, or other persons of similar description, who are coming temporarily to the United States as a participant in a program designated by the Department of State, for the purpose of teaching, instructing or lecturing, studying, observing, conducting research, consulting, demonstrating special skills, or receiving training and who, if they are coming to the United States to participate in a program under which they will receive graduate medical education or training, also meet certain other legal requirements. 8 U.S.C. § 1101(a)(15)(J); 8 C.F.R. § 214.2(j).

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To describe the outcomes of selected agencies' activities to counter the transfer of federally funded university research by Chinese students and scholars for the benefit of PRC-related entities, we reviewed information on such investigations from the five agencies that provided the largest amount of funding for federal research and development at U.S. universities in 2019. These agencies were the Department of Defense (DOD), the Department of Energy (DOE), the National Aeronautics and Space Administration (NASA), the National Science Foundation (NSF), and the Department of Health and Human (HHS) Service's National Institutes of Health (NIH).<sup>16</sup> Together, these agencies accounted for almost 90 percent of federal research and development expenditures at universities in fiscal year 2019. We also reviewed DOJ information about prosecutions related to federally funded research at U.S. universities. We discussed such cases with officials from the five grant-making agencies in our review and DOJ. For more information on the scope and methodology, please see appendix I.

The performance audit upon which this report is based was conducted from June 2020 to August 2022 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate, evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives. We subsequently worked with DOD, DHS, and State from August 2022 to November 2022 to prepare, in accordance with generally accepted government auditing standards, this nonsensitive version of the original sensitive report for public release.

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<sup>16</sup>Because research and development spending by NIH accounted for more than 95 percent of all HHS research and development expenditures in fiscal year 2019, we chose to focus our review on NIH, rather than HHS as a whole. Note that although NIH is a sub-agency of HHS, we refer to NIH as an agency in this report.

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## Background

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### Foreign Students and Scholars at U.S. Universities

ICE and State/ECA have a variety of mechanisms in place to oversee foreign students and scholars, including SEVIS.<sup>17</sup> Both agencies use SEVIS to track and manage information on F-1 foreign students and J-1 exchange visitors, among other things. At SEVP-certified universities, designated school officials are responsible for entering and maintaining complete and timely information on foreign students,<sup>18</sup> which includes entering information into SEVIS on courses of study and attendance.<sup>19</sup> For exchange visitors, according to State/ECA officials, information in SEVIS is completed by the sponsor or other U.S. government partners.

From 2016 through 2020, there were, on average, 1.2 million F-1 and J-1 students per year studying at U.S. universities. About 31 percent of these students were Chinese nationals.<sup>20</sup> As shown in figure 1, during this

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<sup>17</sup>Other oversight mechanisms include certifying schools to host foreign students. Every 2 years, ICE is required to conduct a review of certified schools' continued eligibility and compliance with the program's requirements. For more information see GAO, *Student and Exchange Visitor Program: DHS Can Take Additional Steps to Manage Fraud Risks Related to School Recertification and Program Oversight*, [GAO-19-297](#) (Washington, D.C.: Mar. 18, 2019).

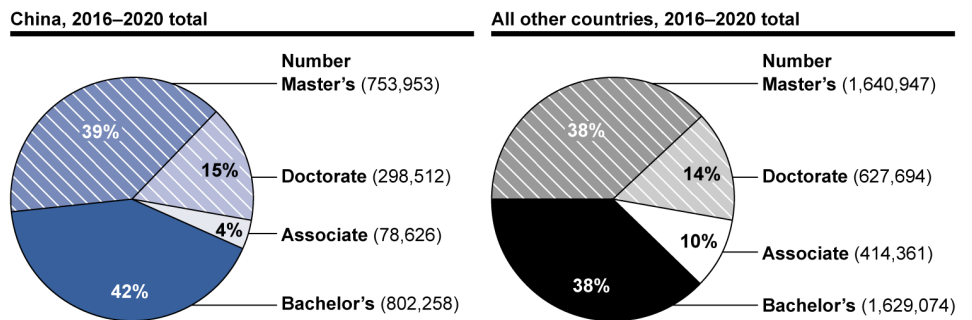
<sup>18</sup>Designated school officials act as liaisons between foreign students, the designated school officials' employing school, and federal government agencies. Designated school officials are to support school compliance with record-keeping, reporting, and other requirements, and provide recommendations to foreign students regarding the maintenance of their immigration status. In addition to entering and maintaining complete information on students in SEVIS in a timely manner, designated school officials are responsible for using SEVIS to submit their school's certification petition and update the information, as necessary.

<sup>19</sup>Certain foreign students participating in post-completion optional practical training can use the SEVP Portal to report certain information, such as address and employer information, to SEVIS.

<sup>20</sup>To calculate the number of foreign students for this report, we analyzed record-level student data from SEVIS for individuals with either an F-1 or J-1 visa, who were active in 2016 through 2020 and had an associate, bachelor's, master's, or doctoral degree listed as their level of education. Because the SEVIS data contained duplicate records for some individuals, such as those who had transferred schools or had different levels of education in the same year, for analysis requiring a count of unique students, we selected the most recent record for each individual in a given calendar year. As a result, for figures that involve counts of individuals by degree type, individuals who may have participated in multiple degree programs within a year were only counted once in that year at their most recent level of study. Data could therefore represent an undercount or overcount of certain education levels in a given year. For more information, see appendix I.

period, about 54 percent of Chinese nationals who were F-1 and J-1 university students studied at the graduate-degree level (including master's and doctorate degrees), which is similar to the 53 percent of graduate-degree-level students from all other countries.

**Figure 1: Foreign Students Studying at U.S. Universities for Nationals of China and All Other Countries, by Level of Education, 2016–2020**



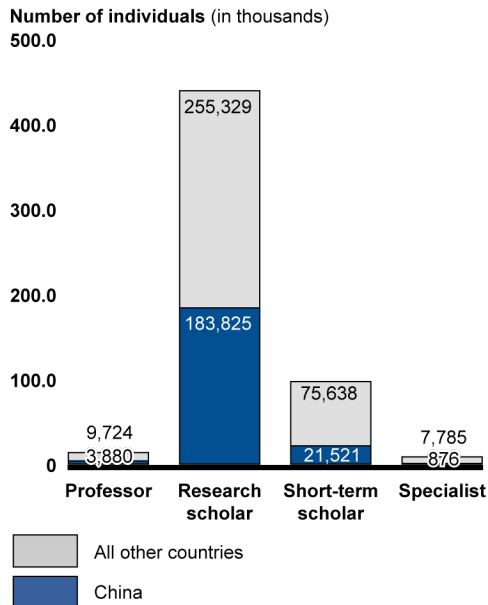
Source: GAO analysis of Student and Exchange Visitor Information System (SEVIS) data. | GAO-23-106114

Note: Foreign students include individuals studying at the associate, bachelor's, master's, or doctoral level on F-1 visas at SEVP-certified universities and J-1 visas at accredited, post-secondary institutions.

Beyond students, Chinese nationals also constituted about 38 percent of the total of J-1 scholars in State's Exchange Visitor Program during the same 5-year period.<sup>21</sup> However, this proportion varied significantly among the program categories, ranging from about 10 percent of specialists to 42 percent of research scholars (see fig. 2).

<sup>21</sup>State/ECA identified four categories of exchange visitors, who are admitted to the United States on J-1 visas, as foreign scholars: research scholar, short-term scholar, professor, and specialist.

**Figure 2: Department of State Exchange Visitor Program Participants in Foreign Scholar Program Categories for Nationals of China and All Other Countries, 2016–2020**



Source: GAO analysis of Student and Exchange Visitor Information System (SEVIS) data. | GAO-23-106114

## Employment and Academic Training for Foreign Students at U.S. Universities

Certain foreign students in the United States can participate in employment and academic training. Eligible J-1 university students in State/ECA’s Exchange Visitor Program may engage in part-time employment, known as student employment, under certain conditions, including good academic standing at their host institution. Students may also participate in academic training with or without wages or other remuneration during their studies with the approval of the academic dean or adviser and the responsible officer at their sponsor organization. From 2016 through 2020, Chinese nationals accounted for about 9 percent of participants in student employment and 7 percent of participants in academic training.

ICE’s SEVP also has two types of employment training opportunities for F-1 university students—curricular practical training (CPT) and optional practical training (OPT). CPT is defined as alternative work/study, internship, cooperative education, or any other type of required internship or practicum offered by sponsoring employers through cooperative agreements with the school. Eligible foreign students can also temporarily work in the United States under OPT, which is defined as temporary

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employment that is directly related to an F-1 student's major area of study.<sup>22</sup> There are three types of OPT:

- *Pre-completion OPT*. Eligible foreign students may engage in part-time work while they are in school or full-time work while on school breaks. Students must report interruption of employment or any change in name or address to the designated school official.
- *Post-completion OPT*. Eligible foreign students may engage in up to 12 months of full-time work after they have completed their program of study. Students must report interruption of employment or any change in name or address to the designated school officials. Students may not accrue more than 90 days of unemployment.
- *STEM OPT*. Eligible foreign students may engage in an additional 24 months of full-time work following post-completion OPT if they are studying in areas related to STEM.<sup>23</sup> Students must submit validation reports of all information to the designated school official every 6 months and report a change in name, address, or employment within 10 days of the change. Employers must agree to report the termination or departure of a student to the designated school official within 5 days of departure. Students may not accrue more than 150 days of unemployment (including the 90 days allowed during the initial 12-month post-completion OPT).

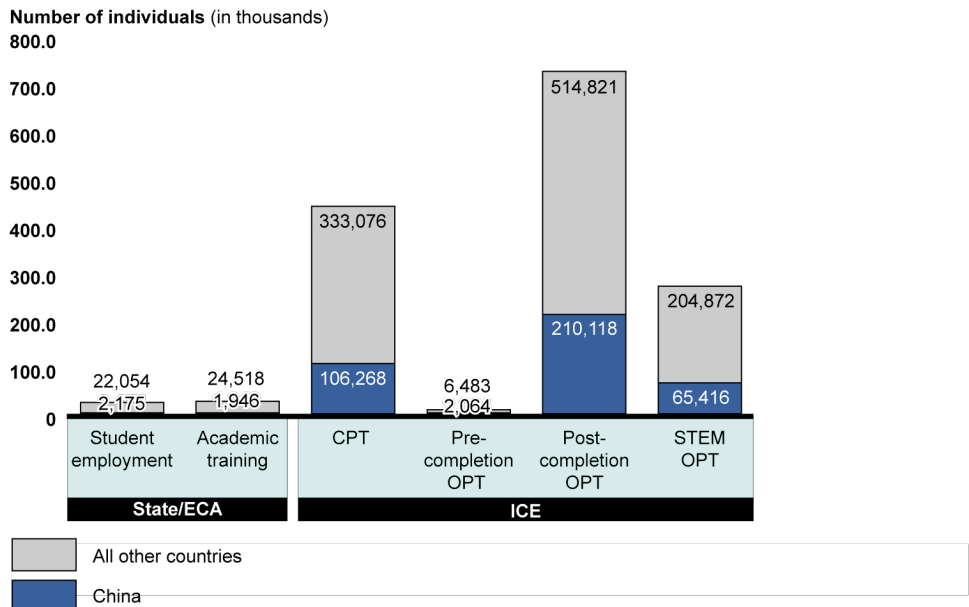
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<sup>22</sup>OPT is an employment benefit that allows foreign students on F-1 visas to obtain temporary work in their areas of study during and after completing an academic program. ICE is responsible for monitoring foreign students and schools, including their compliance with OPT requirements, and enforcing immigration laws for those that fail to comply. According to ICE regulations and policies, OPT is available to eligible foreign students who are enrolled in a college, university, conservatory, seminary, or established vocational or other recognized nonacademic institution, in a program other than English language training. Employment under OPT must be in a job directly related to the foreign student's major area of study, and foreign students who apply to participate in OPT must have completed at least one academic school year.

<sup>23</sup>For the purposes of the 24-month STEM OPT program, DHS has created the STEM Designated Degree Program List, which is a complete list of fields of study that DHS considers to be related to science, technology, engineering, or mathematics. Under 8 C.F.R. § 214.2(f)(10)(ii)(C)(2), a STEM field of study is one "included in the Department of Education's Classification of Instructional Programs taxonomy within the two-digit series containing engineering, biological sciences, mathematics, and physical sciences, or a related field. In general, related fields will include fields involving research, innovation, or development of new technologies using engineering, mathematics, computer science, or natural sciences (including physical, biological, and agricultural sciences)." DHS most recently revised the list in January 2022.

From 2016 through 2020, Chinese nationals accounted for about 24 percent of CPT participants and 28 percent of OPT participants. Within the three types of OPT, Chinese nationals accounted for about 24 percent of pre-completion participants, 29 percent of post-completion participants, and 24 percent of STEM OPT participants. See figure 3 for a comparison of the number of participants in State/ECA and ICE’s student employment and academic training programs from 2016 through 2020.

**Figure 3: Foreign Students and Scholars Approved for Employment and Academic Training, by Program and Nationality, 2016–2020**



Legend: State/ECA = Department of State Bureau of Educational and Cultural Affairs, ICE = U.S. Immigration and Customs Enforcement, CPT = curricular practical training, OPT = optional practical training, STEM = science, technology, engineering, and math.

Source: GAO analysis of Student and Exchange Visitor Information System (SEVIS) data. | GAO-23-106114

Note: Data include foreign students participating in student employment and academic training who are admitted on J-1 visas, and foreign students participating in CPT and OPT who are admitted on F-1 visas. We excluded students admitted on M-1 visas, which are issued for vocational and other nonacademic studies, because we identified no more than one record per year in the SEVIS data for 2016 through 2020 with an M-1 visa at the associate, bachelor’s, master’s, or doctoral level of education.



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## Selected Presidential Actions Related to Foreign Students and Research Security

Since 2020, several presidential actions, some in response to the COVID-19 pandemic, have affected various research security efforts and the entry of foreign students and scholars to the United States. For example:

- In May 2020, Presidential Proclamation No. 10041, *Suspension of Entry as Immigrants and Nonimmigrants of Certain Additional Persons Who Pose a Risk of Transmitting 2019 Novel Coronavirus*, suspended the entry into the United States of travelers from foreign areas where significant COVID-19 outbreaks had occurred, including the PRC.<sup>24</sup> Such pandemic-related restrictions on foreign visitors, as well as reduced staffing at visa processing posts, curtailed 2020 visa processing for many visa applicants, including students and scholars.
- Also in May 2020, Presidential Proclamation No. 10043 (PP 10043), *Suspension of Entry as Nonimmigrants of Certain Students and Researchers from the People's Republic of China*, declared that the entry of certain Chinese nationals, generally post-graduate students and research scholars seeking to study certain critical and emerging technology fields, would be detrimental to national interests because of the risk that they might be acting as non-traditional collectors of intellectual property.<sup>25</sup> We omitted specific details on State's implementation of PP 10043 because State deemed the information to be sensitive.
- In January 2021, Presidential Proclamation 10141, *Ending Discriminatory Bans on Entry to the United States*, directed State to, among other things, resume some visa processing that had been paused by previous proclamations, including some related to the COVID-19 pandemic.<sup>26</sup>
- Also in January 2021, *National Security Presidential Memorandum 33: U.S. Government-Supported Research and Development National Security Policy* (NSPM-33) directed agencies, including DHS, State, and agencies funding research and development activities, to

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<sup>24</sup>*Suspension of Entry as Immigrants and Nonimmigrants of Certain Additional Persons Who Pose a Risk of Transmitting 2019 Novel Coronavirus*, Proclamation No. 10041, 85 Fed. Reg. 31,933 (May 24, 2020). The Special Administrative Regions of Hong Kong and Macau were excluded from the restrictions in the proclamation.

<sup>25</sup>*Suspension of Entry as Nonimmigrants of Certain Students and Researchers from the People's Republic of China*, Proclamation No. 10043, 85 Fed. Reg. 34,353 (May 29, 2020).

<sup>26</sup>*Ending Discriminatory Bans on Entry to the United States*, Proclamation No. 10141, 86 Fed. Reg. 7,005 (Jan. 20, 2021).

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strengthen protections of U.S. government-supported research and development against foreign government interference and exploitation.<sup>27</sup>

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## Agency and University Procedures for Addressing Cases of Alleged Foreign Influence

Federal agencies that fund research have a strong interest in ensuring the security and integrity of the research they fund, including that it is scientifically rigorous and free of bias such as interference that might be introduced by foreign influence.<sup>28</sup> Two tools agencies may use to address foreign influence are conflict of interest policies and disclosure requirements for certain information.<sup>29</sup> Such information could include current and pending research support, professional appointments, and other foreign affiliations including those relating to foreign government talent recruitment programs.<sup>30</sup> Our work and that of others has emphasized the importance of these tools in effectively addressing the threat of foreign influence in federally funded research.<sup>31</sup> In addition, we and others have noted challenges the research community faces in addressing foreign influence while maintaining an open research

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<sup>27</sup> *National Security Presidential Memorandum 33: U.S. Government-Supported Research and Development National Security Policy* (Washington, D.C.: Jan. 14, 2021).

<sup>28</sup> Examples of foreign influence include affiliations that may lead to undisclosed financial or non-financial conflicts of interest, such as foreign government talent recruitment programs and gifts from foreign entities. Officials from grant-making agencies emphasized that the foreign influence from which they aim to safeguard their grant-funded research is focused on unmitigated, improper foreign interference. However, they said that they strive to maintain transparent, collaborative international research cooperation.

<sup>29</sup> C.F.R. Part 200 contains the federal regulations for the uniform administrative requirements, cost principles, and audit requirements for federal awards. The regulations include a requirement that federal awarding agencies establish conflict of interest policies for federal awards. 2 C.F.R. § 200.112. While the regulations do not define “conflict of interest,” they specify the procurement procedures a non-federal entity must have and use for procurements made in support of a federal award, and address the non-federal entity’s requirement to maintain “written standards of conduct covering conflicts of interest and governing the actions of its employees engaged in the selection, award and administration of contracts.” 2 C.F.R. § 200.318.

<sup>30</sup> According to the Office of Science and Technology Policy, a government-sponsored talent recruitment program is an effort directly or indirectly organized, managed, or funded by a foreign government to recruit science and technology professionals in targeted fields. It further noted that some countries sponsor such programs for legitimate purposes, but some countries’ programs include language that creates conflicts of interest for researchers, such as by transferring U.S.-funded work to another country. The White House Office of Science and Technology Policy, *Enhancing the Security and Integrity of America’s Research Enterprise* (Washington, D.C.: June 2020).

<sup>31</sup> [GAO-21-130](#).

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environment that fosters collaboration, transparency, and the free exchange of ideas.<sup>32</sup>

NSF, NASA, DOE, DOD, and HHS each have an independent Office of Inspector General (OIG) that conducts oversight of agency activities, including potentially investigating crimes such as fraud related to grant-funded research activities. Such OIGs might refer their findings to DOJ for prosecution or to agency management for administrative actions. NIH, an operational division of HHS, does not have an internal OIG but is overseen by the HHS OIG. In addition to oversight by the HHS OIG, NIH carries out grant compliance reviews through its Office of Extramural Research, primarily to address concerns about undisclosed or inadequately addressed conflicts of interest.<sup>33</sup> In January 2022, the White House published guidance related to NSPM-33 intended to provide clarity regarding disclosure requirements (e.g., who discloses what), the disclosure process (including updates, corrections, certification, and supporting documentation), and expected degree of cross-agency uniformity.<sup>34</sup>

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<sup>32</sup>GAO-20-394 and United States Senate, Permanent Subcommittee on Investigations, Committee on Homeland Security and Governmental Affairs, *Threats to the U.S. Research Enterprise: China's Talent Recruitment Plans* (Washington, D.C.: November 2019).

<sup>33</sup>NIH officials indicated that they had referred a small number of cases to the HHS OIG for investigation of a possible crime.

<sup>34</sup>See White House, *Guidance for Implementing NSPM-33* (Washington, D.C.: January 2022). Section 4(b) of the guidance directs that research funding agencies shall require the disclosure of information related to potential conflicts of interest and commitment from participants in the federally funded research enterprise, noting that the appropriate disclosure requirement varies depending on the individual's role. For example, it also notes that research agencies should not generally require disclosures from graduate students, undergraduates, and other "broader classes of individuals" unless variations are warranted in specific circumstances, such as if a student is specifically noted among senior personnel for whom more detailed disclosures are required. Section 4(b)(vi) directs that agencies should standardize forms for initial disclosures and annual updates, and should provide clear instructions to accompany these forms to help minimize associated administrative burden.

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## ICE Data That Could Help Agencies Assess Technology Transfer Risks Are Incomplete

### U.S. Agencies and Others Have Identified Factors That May Indicate Risk for Transferring University Technology, but ICE Has Not Completed a Required Data Assessment

U.S. agencies, including DHS and State, and non-governmental entities have identified some factors that potentially indicate which foreign students or scholars may pose more risk of transferring technology at U.S. universities. We have previously compiled the following list of risk factors, which could inform decision-makers' efforts to assess the risk for technology transfer at universities.<sup>35</sup>

- *Studying or researching at a graduate or postgraduate level.* U.S. agency, think tank, and university officials have indicated that master's and doctoral-level students are more likely to have access to research than undergraduate students.
- *Studying or researching in a sensitive field.* U.S. agency officials and documents have identified a number of STEM fields of particular concern.
- *Receiving research or scholarship funding from a foreign entity of concern.*<sup>36</sup> U.S. agencies and others have identified certain talent recruitment and scholarship programs as potential concerns because of actual or perceived obligations for the researcher or individual to report information to the PRC government in return for prestige or

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<sup>35</sup>We previously reported on characteristics of individual foreign students and scholars that could indicate risk for sensitive technology transfers at U.S. universities. In that report, we also compiled a list of characteristics of individual U.S. universities that could indicate a technology transfer risk and reported on the extent to which agencies used these characteristics to prioritize efforts to conduct outreach to universities about such risks. We identified these risk factors through interviews with relevant agency officials and members of associations or think tanks with expertise in export control issues or research security issues, reviews of published government reports and other agency documents, and reviews publications by relevant associations and think tanks. This analysis did not include the use of any classified sources. For more information on those risks, see GAO, *Export Controls: Enforcement Agencies Should Better Leverage Information to Target Efforts Involving U.S. Universities*, [GAO-22-105727](#) (Washington, D.C.: June 14, 2022).

<sup>36</sup>For purposes of this report, "foreign country of concern" means the countries identified by DHS and State as being a concern for technology transfer.

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remuneration. Other countries also have talent recruitment programs, according to agency and university officials.

- *Being a citizen of a foreign country of concern.*<sup>37</sup> Agency officials have said there are some particular countries of concern for technology transfer, including China, Russia, and Iran.
- *Being associated with a foreign entity of concern.* Agency documents have cited affiliation with the PRC People's Liberation Army or with foreign entities identified on the U.S. government's Consolidated Screening List as a concern for technology transfer.

In addition to these risk factors, NSPM-33 required the Secretaries of State and Homeland Security to ensure that vetting processes for foreign students and researchers reflect risk to U.S. research and development. Specifically, it mandated DHS to assess any regulatory and technical updates necessary to require that relevant institutions report certain information in SEVIS for foreign students and researchers, including the following:

- Employment and employment history
- Sources of financial support
- Education history, including academic institutes, degrees, and research advisors
- Current and prior research and development affiliations and projects
- Current and pending participation in foreign government-sponsored talent recruitment programs
- Program of study or research
- Facility and locations of expected work

As shown in table 1, ICE and State/ECA officials told us that they currently require the collection of some data in SEVIS related to factors that agencies have identified as potentially useful for assessing the risk of transferring university technology. However, the purpose of SEVIS is to track and monitor nonimmigrant students and scholars studying in the United States, according to agency documents, and not specifically to collect data related to the risk of transferring technology to another country. For example, SEVIS does not currently include fields for data

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<sup>37</sup>For purposes of this report, "foreign country of concern" means the countries identified by DHS and State as being a concern for technology transfer.

regarding participation in foreign government-sponsored talent recruitment programs or education history for schools attended outside of the United States.

**Table 1: Student and Exchange Visitor Information System (SEVIS) Data Fields That Could Enhance Agency Assessment of Technology Transfer Risk, as of February 2022**

Potential risk factors identified by agencies or National Security Presidential Memorandum 33	Related data fields in SEVIS	Data required in SEVIS identified by ICE and State/ECA
Country of Concern	Country of Citizenship	Required
Graduate or post-graduate level of study or research	Student Education Level (F)	Required
	Category (J)	Required
Program of study or research <sup>a</sup>	Major Code and Major Description (F)	Required
	Subject Field Code and Subject Field Description (J)	Required
Sensitive field of study or research	No related data field(s) <sup>b</sup>	N/A
Education history <sup>a</sup>	No related data field(s) <sup>c</sup>	N/A
Research advisor <sup>a</sup>	No related data field(s)	N/A
Current and prior research and development affiliations and projects <sup>a</sup>	No related data field(s)	N/A
Employment <sup>a</sup>	Employment Type (F, J-Student Employment <sup>d</sup> )	Required
	Employer Name (F, J-Student Employment)	Required <sup>e</sup>
	Job Title (F)	Not required
	Start and End Dates <sup>f</sup>	Required
Facility and location of expected work <sup>a</sup>	Site of Academic Training (J)	Required
	Address	Required <sup>g</sup>
Employment history <sup>a</sup>	No related data field(s) <sup>h</sup>	N/A
Association with foreign entity of concern	No related data field(s)	N/A
Current and pending participation in foreign government-sponsored talent recruitment programs <sup>a</sup>	No related data field(s)	N/A
Source of financial support <sup>a</sup>	SEVIS contains multiple fields for the dollar value of student expenses and funding as well as narrative fields describing the sources of funding	Not required <sup>i</sup>

Legend: N/A = not applicable; F = students managed by ICE's Student and Exchange Visitor Program who are admitted on F-1 visas; J = student or scholar categories managed by State/ECA's Exchange Visitor Program who are admitted on J-1 visas.

Source: GAO analysis of U.S. Immigration and Customs Enforcement (ICE) and Department of State/Bureau of Educational and Cultural Affairs (ECA) information. | GAO-23-106114

Note: Unless otherwise noted in the table, data fields and requirements apply to both student F-1 visa holders and student and scholar J-1 visa holders.

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<sup>a</sup>Information requirement identified in NSPM-33 that could help ensure that the vetting process for foreign students and researchers reflects the changing nature of the risks to U.S. research and development.

<sup>b</sup>Although SEVIS does not have a data field to note whether a field of study or research is sensitive, the Department of Homeland Security (DHS) maintains a separate list of designated STEM fields of study. The STEM Designated Degree Program List is maintained to identify the fields of study that qualify as STEM fields of study for the purpose of nonimmigrant student eligibility for the STEM optional practical training (OPT) extension, according to ICE officials.

<sup>c</sup>Although SEVIS does not contain data on education history and field of study for individuals whose prior education is at a foreign university, SEVIS would contain this data for individuals who had previously studied at a SEVP-certified U.S. university in F-1, M-1, or J-1 status, according to ICE officials. SEVIS does not capture program of study for nonimmigrants who study at U.S. universities in other statuses.

<sup>d</sup>J-1 students may engage in part-time employment under certain conditions, including good academic standing at their host institution, which is known as student employment. Students may also participate in academic training with or without wages or other remuneration during their studies with the approval of the academic dean or adviser and the responsible officer at their sponsor organization.

<sup>e</sup>While curricular practical training (CPT) and STEM OPT participants are required to have an employer at the time the designated school official authorizes CPT or recommends STEM OPT in SEVIS, ICE officials told us that applicants for pre- and post-completion OPT are not. Per regulations, F-1 students on post-completion OPT have up to 90 days after they are approved for OPT to find employment. Additionally, every person on post-completion or STEM OPT can accrue a limited number of days of unemployment (90 days for post-completion OPT and 150 days for STEM OPT, which is inclusive of any time accrued while on post-completion OPT).

<sup>f</sup>Employment start and end date fields that ICE officials indicated are required include: employer start date, which is required for F-1 students in ICE's SEVP and J-1 students in State/ECA's Exchange Visitor Program; employer end date and academic training start and end date, which are required for J-1 students in State/ECA's Exchange Visitor Program; and authorized start and end dates, which are required for F-1 students in ICE's SEVP.

<sup>g</sup>ICE officials said that they collect information on facility and location of expected work as it pertains to a student's practical training, and as reported by designated school officials into SEVIS. Information regarding sites of assistantships, off-campus employment, internships with international organizations, work on-campus and other related employment is not currently reported in SEVIS.

<sup>h</sup>Although SEVIS does not have employment history data, it would contain information on F-1 students previously authorized in SEVIS for CPT and OPT, among others, according to ICE officials. In addition, SEVIS would have information for sites of activity for J-1 employment-based categories such as research scholars, and student employment or academic training for J-1 students.

<sup>i</sup>ICE and State/ECA officials said that there are no specifically required fields for source of funding in SEVIS; however, students in both the SEVP (F-1 visa) and Exchange Visitor Program (J-1 visa) are required to show that they have sufficient funds to cover the costs associated with their programs of study at the time they apply. Specifically, ICE officials said that while the individual fields for type of financial support are not marked as required, school and sponsor officials cannot issue the forms that provide proof that an individual is accepted to study at an agency-certified school or support the application for the Exchange Visitor Program without selecting at least one source of financial support and providing the dollar amount. They noted that there is a system validation to ensure that there is a data source and a dollar amount for the nonimmigrant and that the amount must cover the total costs of the program. Furthermore, the officials said that if the designated school official selects certain types of funding, such as government funding, SEVIS requires a description for this type of funding. For Exchange Visitor Program (J-1) students, State/ECA officials noted that, of 19 potential funding fields, only the field indicating whether the individual had received U.S. government funding is required.

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NSPM-33 section 4(d)(ii) required the Secretary of Homeland Security to assess by April 14, 2021, any regulatory and technical updates necessary to require that relevant institutions report in SEVIS the specific categories of information identified in the memorandum. It also notes that within 3 months of the completion of that assessment, the Secretary of Homeland Security shall provide to the Assistant to the President for National Security Affairs a plan regarding the implementation of such requirements.<sup>38</sup> ICE officials told us that ICE is the appropriate DHS component to lead this review but had not completed the assessment or the implementation plan as of May 2022.

ICE officials said that SEVIS is the correct database to collect the information outlined in NSPM-33 because schools and students are familiar with the system and the agency has the infrastructure to support questions about how to incorporate this new information into the system. However, these officials identified three reasons for the delay in conducting the required assessment. First, officials said that DHS has mandated a number of cybersecurity enhancements to SEVIS that used SEVP resources during the past year. Second, according to officials, SEVP has been and continues to operate with reduced staffing for SEVIS because of financial resource challenges as a fee-funded program during the COVID-19 pandemic, which limited international travel to the United States. Third, ICE officials expressed concern that using SEVIS to collect some of the data identified in NSPM-33 may raise other privacy and legal issues, and were considering whether it would be feasible to write the implementation plan noted in NSPM-33 section 4(d)(ii).

In May 2022, ICE officials estimated that the assessment would not be completed for at least 9 to 12 months but did not provide a firm time frame and had not established milestones for completing the assessment and implementation plan. They noted that the time frame would depend in large part on completing several tasks. For example, after identifying and addressing preliminary privacy and legal issues, officials told us that they plan to investigate the extent to which each data element specified in NSPM-33 is already being collected in SEVIS or is available in other U.S. government data systems, such as State's visa adjudication system. ICE officials also noted that they would need to determine how to gain access to information collected elsewhere or, if appropriate, how to establish new collection mechanisms within SEVIS. Further, ICE officials expressed

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<sup>38</sup>See section 4(d)(ii) of *National Security Presidential Memorandum 33: U.S. Government-Supported Research and Development National Security Policy* (Washington, D.C.: Jan. 14, 2021).



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uncertainty about whether the required assessment would identify changes to SEVIS that would necessitate an implementation plan. ICE officials also said they had concerns about whether the administrative and other costs associated with making changes to SEVIS would outweigh the benefits of collecting any additional information. Nonetheless, completing this requirement is an important step in helping ICE understand what, if any, changes the agency could make to SEVIS, which in turn could help the U.S. government collect more comprehensive data with which to identify and assess potential risks to U.S. university research. According to federal internal control standards, management should design control activities, such as milestones, to achieve objectives and respond to risks.<sup>39</sup> Establishing milestones for completing the assessment could help ICE fulfill its requirements under NSPM-33 section 4(d)(ii).

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### Some ICE Data That Could Be Used to Assess the Risk of Transferring University Technology Are Incomplete

While SEVIS was not designed as a mechanism for collecting data on the risk of technology transfer, as described above, it includes data fields related to some risk factors. However, some data on F-1 students are incomplete. Specifically, for some risk factors, ICE and State/ECA have no single required data field, according to agency officials. For other risk factors, agency officials said that they require the collection of related data, but our analysis indicates that the completeness of the data varies.

For example, there is no single specific field that has to be completed for source of financial support, according to ICE and State/ECA officials. While SEVIS includes data fields describing the source of financial support for F-1 and J-1 students, ICE and State/ECA officials said that the funding fields in SEVIS are optional for these students, who only need to show that they have sufficient funds to cover costs associated with their programs of study. Specifically, State/ECA officials said that Exchange Visitor Program sponsors need to identify one source of funding in SEVIS.<sup>40</sup> ICE officials said that F-1 students need to show that they can afford their education without working when they apply to school, and that

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<sup>39</sup>GAO-14-704G, Principle 6: Define Objectives and Risk Tolerance.

<sup>40</sup>To be eligible for designation as a program sponsor, an organization must demonstrate its ability to comply and remain in continual compliance with all provisions of the Exchange Visitor Program regulations (22 C.F.R. Part 62); see 22 C.F.R. § 62.3(b) and 22 C.F.R. § 62.5(b).

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additional information in SEVIS is provided on an ad hoc basis.<sup>41</sup> For example, our analysis of SEVIS data indicated that F-1 students participating in SEVP have a wide range of funding sources, including parental support, personal funds, and scholarship support. We also found that some records identified funding from a scholarship program that State has noted is a source of concern for technology transfer. As noted above, there is no required data field describing the source of a student's funding, and we found that about 21 percent of the F-1 student records and 7 percent of the J-1 student and scholar records we reviewed did not contain such information.

For other data fields related to risk factors for technology transfer, agency officials said that they already require data collection in SEVIS, but the completeness of the data varies. Among the data fields officials identified as required, we found that F-1 and J-1 students' and scholars' records generally included the country of citizenship and level of education from 2016 through 2020. These data indicate that Chinese nationals generally constituted the largest number of F-1 and J-1 students studying at the graduate level in a STEM field, F-1 students approved to participate in STEM OPT, and J-1 research and short-term scholars, as detailed below.

Over that time period, the majority (about 1.6 million, or 74 percent) of F-1 and J-1 foreign students in graduate programs in a STEM field of study were Indian and Chinese nationals.<sup>42</sup> Specifically, Chinese nationals accounted for 32 percent (722,765) of the total number of graduate students, and Indian nationals accounted for 41 percent (925,352).<sup>43</sup> Students studying for a master's degree in a STEM field most often were Indian nationals (52 percent), while there were more Chinese nationals (37 percent) studying for a PhD in a STEM field than students from any other country. See figure 4 for a comparison of the top five countries for STEM master's and PhD students studying in the United States from 2016 through 2020.

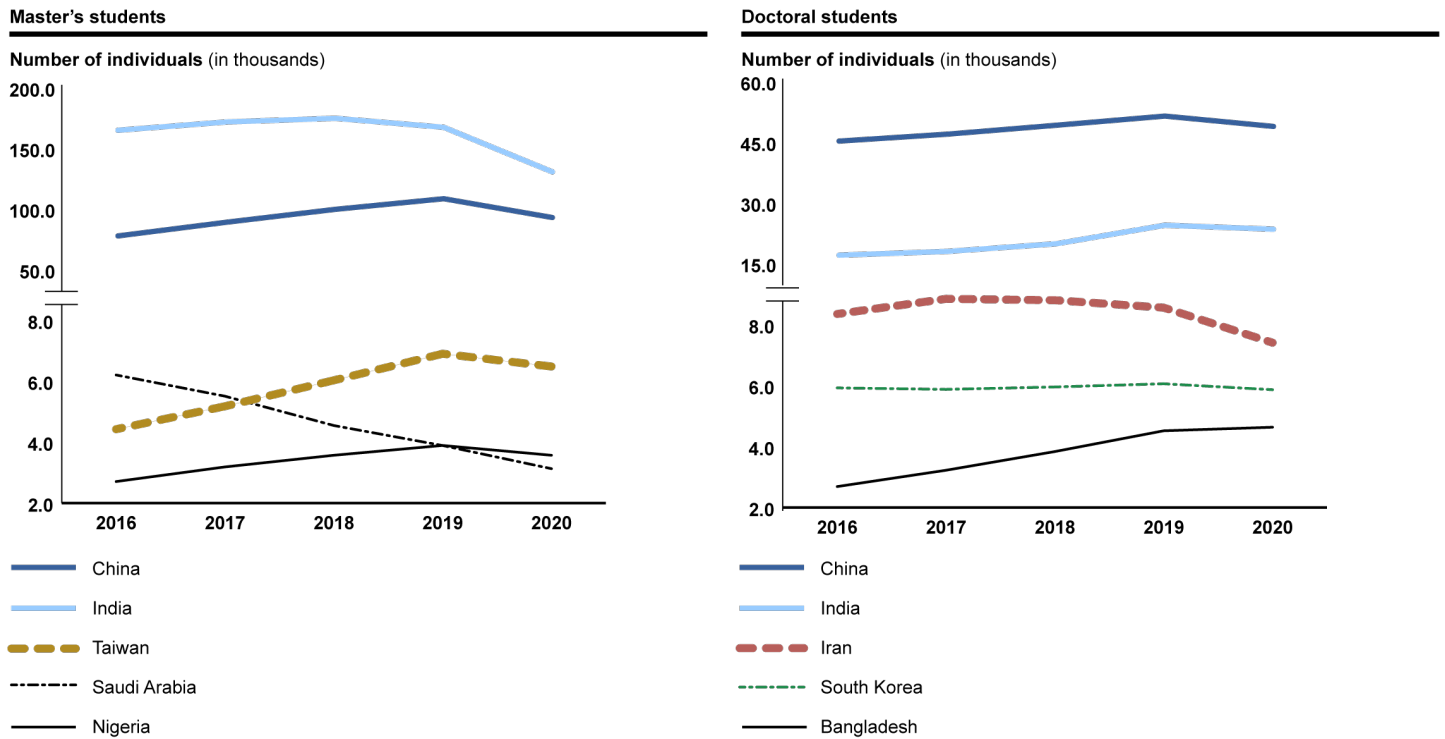
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<sup>41</sup>Source of funding is not a required field when designated school officials complete the Form I-20 "Certificate of Eligibility for Nonimmigrant Student Status," according to ICE officials. Federal regulations require students to provide documentary evidence of financial support in the amount indicated on the SEVIS Form I-20 but do not require identification of the source of the funds. 8 C.F.R. § 214.2(f)(1)(i)(B).

<sup>42</sup>To identify which F-1 and J-1 foreign students or J-1 scholars had a STEM field of study, we used statistical software to match their primary major to the fields of study included at least once in either DHS's 2016 or 2020 STEM Designated Degree Program Lists.

<sup>43</sup>For information on how we calculated the number of students, see appendix I.

**Figure 4: Top Five Countries for F-1 and J-1 Master’s and Doctoral Students in a Science, Technology, Engineering, and Math (STEM) Field, 2016–2020**



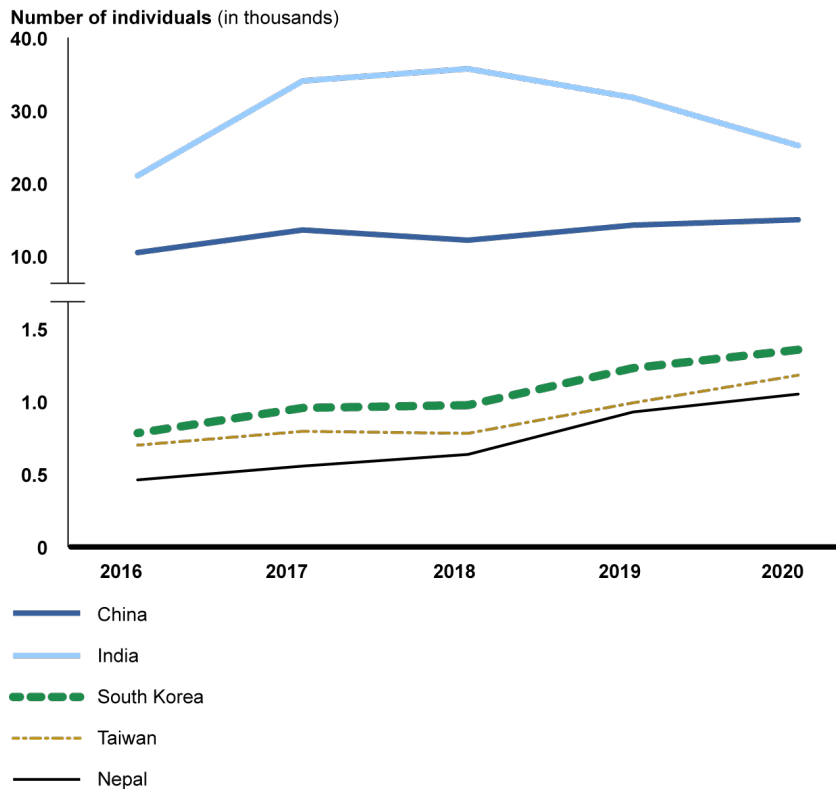
Source: GAO analysis of Student and Exchange Visitor Information System (SEVIS) data. | GAO-23-106114

Notes: Students from U.S. Immigration and Customs Enforcement’s Student Exchange Visitor Program are admitted on F-1 visas. Students from the Department of State Bureau of Educational and Cultural Affairs’ Exchange Visitor Program are admitted on J-1 visas. Participants in 2020 decreased because of the COVID-19 pandemic. Country ranking is based on the total number of participants in a STEM field in each program category from 2016 through 2020.

Although the United States does not have diplomatic relations with Taiwan, we have listed it as a separate country because whenever the laws of the United States refer or relate to foreign countries, nations, states, governments, or similar entities, such terms shall include and shall apply to Taiwan. Taiwan Relations Act, Pub. L. No. 96-8, § 4(b)(1), 93 Stat. 14 (1979). Furthermore, the data we used list Taiwan as a country and show visas from Taiwan separately.

Similarly, from 2016 through 2020, most of the F-1 students in ICE’s STEM OPT were Indian nationals (55 percent), followed by Chinese nationals (24 percent), as shown in figure 5.

**Figure 5: Top Five Countries for F-1 Students Approved for Science, Technology, Engineering, and Math Optional Practical Training (STEM OPT), 2016–2020**



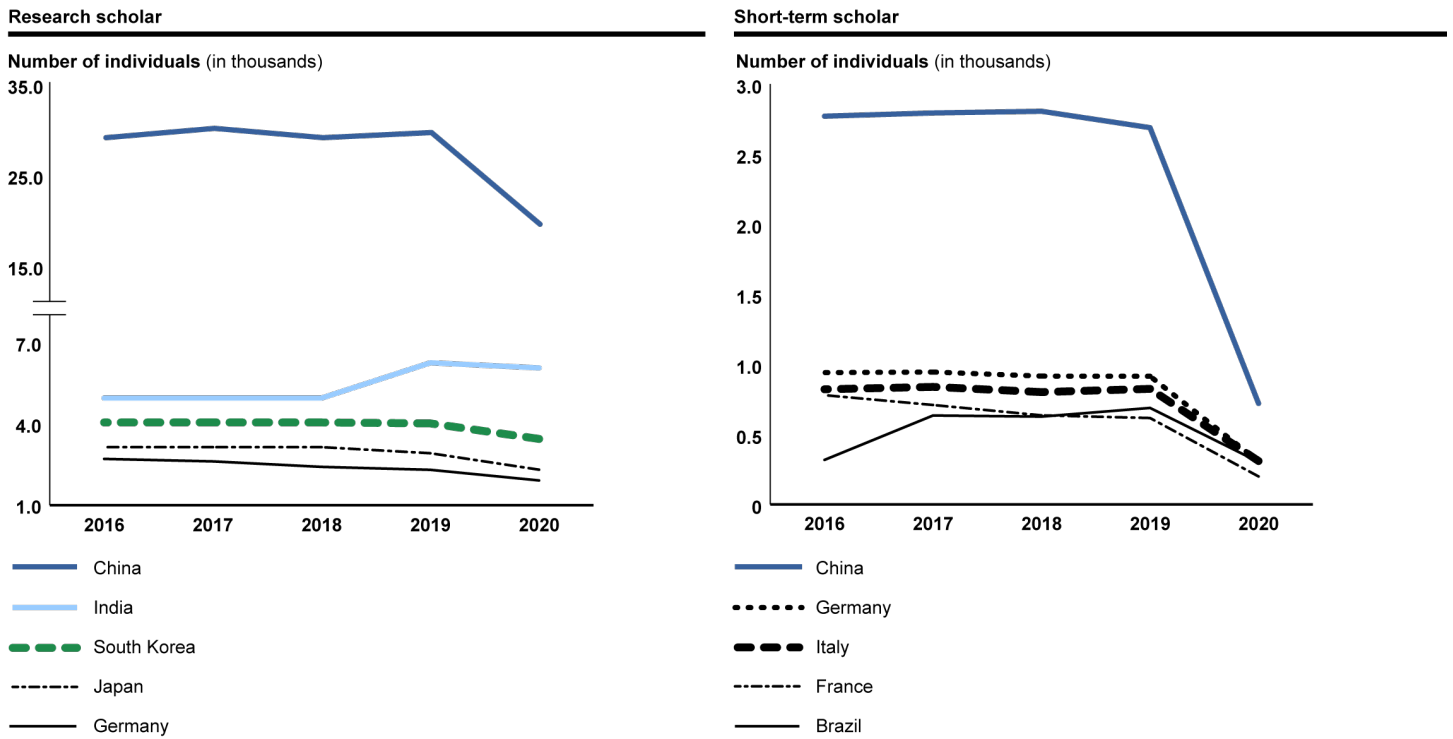
Source: GAO analysis of Student and Exchange Visitor Information System (SEVIS) data. | GAO-23-106114

Notes: Country ranking is based on the total number of participants in a STEM field in each program category from 2016 through 2020. Participants in 2020 decreased because of the COVID-19 pandemic. Data include foreign students participating in OPT who are admitted on F-1 visas. We excluded students admitted on M-1 visas, which are issued for vocational and other nonacademic studies, because we identified no more than one record per year in the SEVIS data for 2016 through 2020 with an M-1 visa at the associate, bachelor's, master's, or doctoral level of education.

Although the United States does not have diplomatic relations with Taiwan, we have listed it as a separate country because whenever the laws of the United States refer or relate to foreign countries, nations, states, governments, or similar entities, such terms shall include and shall apply to Taiwan. Taiwan Relations Act, Pub. L. No. 96-8, § 4(b)(1), 93 Stat. 14 (1979). Furthermore, the data we used list Taiwan as a country and show visas from Taiwan separately.

In addition to these foreign students, Chinese nationals constituted the largest number of foreign scholars, who are admitted on J-1 visas, in a STEM field compared to those from other countries in all of the State/ECA foreign scholar academic categories. For example, 41 percent of research scholars and 22 percent of short-term scholars in a STEM field over that time period were Chinese nationals. (See fig. 6.)

**Figure 6: Top Five Countries for Research and Short-Term Scholar Exchange Visitor Program Participants in a Science, Technology, Engineering, and Math (STEM) Field, 2016–2020**



Source: GAO analysis of Student and Exchange Visitor Information System (SEVIS) data. | GAO-23-106114

Note: Students from the Department of State Bureau of Educational and Cultural Affairs' Exchange Visitor Program are admitted on J-1 visas. Participants in 2020 decreased because of the COVID-19 pandemic. Country ranking is based on the total number of participants in a STEM field in each program category from 2016 through 2020.

Our analysis also indicated that some employment data required by ICE policy were incomplete. Specifically, some SEVIS data on employer name, a required field for F-1 students in ICE's OPT program and related to an identified risk factor for technology transfer, were missing. While requirements for pre-completion, post-completion, and STEM OPT vary, every foreign student approved for OPT must have some form of employment information in SEVIS within 121 days of being authorized to work, according to ICE policy and officials.<sup>44</sup> Students must report their

<sup>44</sup>According to ICE officials, employer information is not required for students approved for pre- and post-completion OPT at the time they apply for the program because they have 90 days to find employment. STEM OPT students, on the other hand, are required to identify employer information at the time they apply for OPT.

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employer's information in SEVIS either directly into the system or through a designated school official.<sup>45</sup> In 2015, ICE created an alert in SEVIS to notify designated school officials of any students who are approved for OPT but do not have employer information in the system.<sup>46</sup> Officials noted that this alert is not used for pre-completion OPT students whose formal nonimmigrant status is related to their enrollment in their ongoing program of study and not contingent on their employment.<sup>47</sup> From 2016 through 2020, about 9 percent of records for F-1 students across all three types of OPT were missing information in SEVIS on employer name that is required by ICE policy (see table 2).

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<sup>45</sup>Participants in post-completion OPT can use the SEVP Portal to report certain information, such as address and employer information, to SEVIS.

<sup>46</sup>ICE created this alert function in response to a recommendation in a 2014 GAO report in which we found that pre- and post-completion OPT records lacked employer name information 65 percent and 48 percent of the time, respectively, because that information was not required in SEVIS. At the time, we reported that although ICE regulations and policy stated that designated school officials are responsible for reporting any change in employers of OPT-approved foreign students in SEVIS, these regulations do not specifically require that students report, and designated school officials provide, students' initial employer information in SEVIS. In response to these findings, we made a recommendation that the Director of ICE direct SEVP to require that pre-completion and post-completion OPT students report to designated school officials, and these officials record in SEVIS, students' employer information, including the employer's name and address. We closed this recommendation as implemented when, in December 2015, SEVP released an updated version of SEVIS requiring the completion of employer information fields for each OPT-approved student record. GAO, *Student and Exchange Visitor Program: DHS Needs to Assess Risks and Strengthen Oversight of Foreign Students with Employment Authorization*, [GAO-14-356](#) (Washington, D.C.: Feb. 27, 2014).

<sup>47</sup>Nonimmigrants, including foreign students, are permitted to enter the United States for an authorized period of stay. The authorized period of stay is the fixed or variable amount of time for which a nonimmigrant is admitted to the United States upon inspection by a U.S. Customs and Border Protection officer at a U.S. port of entry. Students may seek an F visa for academic study at 2- and 4-year colleges and universities and other academic institutions. 8 U.S.C. § 1101(a)(15)(F); 8 C.F.R. § 214.2(f). Students on pre-completion OPT are required to engage in a full course of study and their immigration status is not dependent on their OPT employment, according to ICE officials. Therefore, students who stop working on pre-completion OPT remain in status as long as they continue to make normal progress in their program of study. Although these students are required to report changes in employment, failure to do so does not necessarily mean that they failed to maintain status and would no longer be eligible to be in the United States, according to ICE officials.

**Table 2: Optional Practical Training (OPT) Student Records in SEVIS Missing Employer Name Required by ICE Policy, 2016–2020**

	<b>Requirements for entering employer information in SEVIS</b>	<b>Percentage of records missing required employer name (number of records)</b>
Pre-completion OPT	<ul style="list-style-type: none"> <li>Not required at time of OPT application</li> <li>121 days after authorized start date to enter employer information in SEVIS<sup>a</sup></li> </ul>	60 (1,422)
Post-completion OPT	<ul style="list-style-type: none"> <li>Not required at time of OPT application</li> <li>121 days after authorized start date to enter employer information in SEVIS<sup>b</sup></li> </ul>	12 (80,362)
Science, Technology, Engineering, and Math OPT	<ul style="list-style-type: none"> <li>Employer information required in SEVIS at time of OPT application</li> </ul>	0.1 (354)
<b>Total</b>		<b>9 (82,138)</b>

Source: GAO analysis of U.S. Immigration and Customs Enforcement (ICE) information and Student and Exchange Visitor Information System (SEVIS) student record data for OPT. | GAO-23-106114

Note: Data include foreign students participating in OPT who are admitted on F-1 visas. We excluded students admitted on M-1 visas, which are issued for vocational and other nonacademic studies, because we identified no more than one record per year in the SEVIS data for 2016 through 2020 with an M-1 visa at the associate, bachelor’s, master’s, or doctoral level of education.

<sup>a</sup>According to ICE regulations and policy guidance, students on post-completion OPT cannot accrue more than 90 days of unemployment and must report to their designated school official within 10 days any changes in the student’s employment information. The designated school official is then required to update that employment information in SEVIS within 21 days. ICE officials said that the same regulations requiring employer name information in SEVIS for students on post-completion OPT also apply to pre-completion OPT. Therefore, for the purpose of calculating the number of pre-completion OPT records missing employer name information, we used the same 121-day time frame.

<sup>b</sup>According to ICE regulations and policy guidance, students on post-completion OPT cannot accrue more than 90 days of unemployment and must report to their designated school official within 10 days any changes in the student’s employment information. The designated school official is then required to update that employment information in SEVIS within 21 days.

ICE officials provided several reasons employer name information may be missing from the records of students approved for OPT. First, individuals may not have found employment and either departed the United States because they are no longer students or reenrolled as a student. Second, individuals may not have found employment but remained in the United States without reenrolling as a student, potentially in violation of their immigration status. Finally, individuals may have found employment but failed to update their employer information in SEVIS. ICE officials said that students who are approved for OPT are well informed of the requirement to report employer information after obtaining employment but may not understand the seriousness of the requirement. For instance, students who are approved for post-completion OPT may not understand that providing employer information is necessary to maintain their

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immigration status since they are otherwise no longer eligible as students.<sup>48</sup>

In 2020, ICE undertook an enforcement initiative to identify active OPT students who either exceeded their permissible period of unemployment or failed to report their employment in SEVIS. The agency identified 3,392 individuals to whom ICE sent letters notifying them of the need to update their information in SEVIS. Officials said that some of these individuals ultimately submitted information showing employment while others left the United States. As a result of this enforcement action, OPT records were terminated in SEVIS for about 1,100 students who had not found employment, according to ICE officials.

ICE officials said they could again undertake efforts to identify OPT records in SEVIS that are missing employer information, send out letters to students notifying them of the missing data, and require students or designated school officials to update SEVIS as appropriate. ICE officials suggested that they could conduct such efforts on a 6- or 12-month basis to improve their data. They also noted that they are considering other options to improve employer data, such as using a drop-down menu to improve the quality of employer information currently entered into free-text data fields.

According to federal internal control standards, management should use quality information that is, among other things, complete and accurate to achieve the entity's objectives, and process relevant data into quality information within the entity's information system.<sup>49</sup> The U.S. government has identified research in sensitive fields, facilities and locations of expected work, and employment and employment history as potential risk factors for the transfer of technology. Improving the completeness of employer information in SEVIS could enhance ICE's management of the OPT program and provide the U.S. government with more information on who is employing foreign students and, therefore, whether certain individuals may have access to technology.

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<sup>48</sup>ICE policy guidance states that in order to avoid violating status, prior to reaching the limit on unauthorized employment, the student should prepare to transfer to another SEVP-certified school, change their level of education, depart the United States, or take action to otherwise maintain their status in the United States.

<sup>49</sup>[GAO-14-704G](#), Principle 13: Use Quality Information.



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## Grant-making Agencies Have Increased Investigations of Researchers with PRC Affiliations but Generally Do Not Consider Individuals' Nationality or Citizenship

Since 2016, oversight bodies at the five U.S. grant-making agencies in our review—NIH, NSF, NASA, DOD, and DOE—have investigated an increased number of researchers for potential violations related to the security of federally funded research at U.S. universities, according to agency data. These include grant fraud and compliance violations related to failures to disclose potential sources of foreign influence on researchers, such as other support for individual research endeavors, significant financial interests, or other conflicts of interest.<sup>50</sup> These investigations have often involved undisclosed affiliations with the PRC, such as receiving PRC research funding. However, agency officials emphasized that decisions made to initiate an investigation or during the course of an investigation are not based on individual characteristics such as nationality or visa status, which is information that none of the five agencies in our review consistently collect. Agency data indicate that investigations have resulted in agency and university actions to address research security risks related to foreign influence. However, little information is available about civil and criminal cases related to potential transfer of university research because DOJ does not systematically track all cases specific to U.S. universities or federal grant funding. Further, officials from grant-making and law enforcement agencies we spoke with noted that it is challenging to assess the more general extent and negative impact of technology transfers to foreign countries. Amid agency efforts to address this type of national security threat, university faculty, officials from university and Asian and Asian-American associations, and others have highlighted the importance of balancing protection of federally funded research against potential adverse effects of these efforts.

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<sup>50</sup>Our analysis includes data from the OIGs of NSF, NASA, DOE, and DOD, and NIH's Office of Extramural Research. We included this NIH office because NIH, an operational division of HHS, carries out its own grant compliance reviews through this office. NIH does not have an internal OIG but is overseen by the HHS OIG. NIH's Office of Extramural Research differs from the grant-maker OIGs we included in that it primarily carries out grant compliance reviews specifically to address concerns about undisclosed or inadequately addressed conflicts of interest, rather than investigating a broader range of potential misconduct or crimes. For example, NSF officials noted that its OIG primarily investigates grant fraud, while grantee institutions such as U.S. universities bear primary responsibility for ensuring researchers' compliance with the terms and conditions of NSF grant awards. For DOD, data are specifically from one investigative service and do not include potentially related investigative activities undertaken by other elements of DOD. For the purposes of this report, we generally refer to the activities of all of these organizations as "investigations" and confirmed allegations as "violations."

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## Selected Grant-making Agencies Reported Having Increased Investigations of and Addressed Violations by Researchers, Most of Whom Have Affiliations with the PRC

Grant-making Agency Data Indicate Increased Investigations Related to Foreign Influence in University Research

Since 2016, NIH, NSF, NASA, DOD, and DOE data indicate that the agencies have increased the number of investigations they conducted related to the security of federally funded research at U.S. universities. These investigations included identifying failures to disclose potential conflicts of interest that can exert foreign influence on researchers, such as foreign government talent recruitment program participation,<sup>51</sup> and do not typically include investigating allegations of technology transfers or research theft that may violate related civil or criminal laws, such as those governing export controls. Grant-making agency officials explained that failures to disclose information about potential conflicts of interest undermines the integrity of the grant-making process—and potentially the related research itself—and may preclude the agencies from providing funding to grant applicants competing for the same funding. As a result, agencies may miss opportunities to contribute to other cutting-edge research.

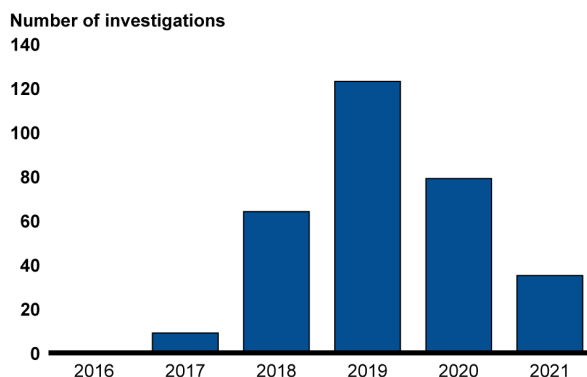
Officials also noted that not all case management systems were designed to readily, discretely identify cases related to U.S. universities or to subjects with ties to the PRC. Rather, they explained that they traditionally categorize or can search their systems for cases based on the nature of the alleged violation, such as fraud or failures to disclose required information, potentially including information about foreign activities and affiliations. Nevertheless, to identify the risk of potential threats to research security from foreign governments, including the PRC, the agencies were able to identify investigations related to foreign influence at U.S. universities, some through manual review of cases.

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<sup>51</sup>NIH officials noted that conflicts of interest, such as foreign government talent program participation, threaten the objectivity of research because of their effects on the behavior of scientists. For example, one concern stemming from talent programs is that scientists are incentivized to conceal potential material financial conflicts of interest or material scientific, budgetary, or commitment overlap. As such, talent programs can incentivize ethical breaches, even if there is no actual intellectual property theft. NIH officials told us that they had identified very few cases of actual intellectual property theft resulting from participation in talent programs.

These investigations were generally focused on grant fraud and failures by researchers to make required disclosures, although there was some variation in how each agency characterized the information provided. Data that these grant-making agencies compiled for 2016 through 2021 show an increase in the number of individuals investigated for violations related to foreign influence at U.S. universities, which was zero before 2017 and totaled 310 from 2017 through 2021. (See fig. 7.)

**Figure 7: Number of Researchers That Grant-making Agencies Reported Investigating for Potential Foreign Influence in Federally Funded Research at U.S. Universities, 2016–2021**



Source: GAO analysis of agency data and interviews. | GAO-23-106114

Notes: The figure includes data from the Offices of Inspector General (OIG) of NSF, NASA, DOE, and DOD, and NIH’s Office of Extramural Research. We included this NIH office because NIH, an operational division of the Department of Health and Human Services (HHS), carries out its own grant compliance reviews through this office. NIH does not have an internal OIG but is overseen by the HHS OIG. NIH’s Office of Extramural Research differs from the OIGs in that it primarily carries out grant compliance reviews specifically to address concerns about undisclosed or inadequately addressed conflicts of interest, rather than investigating a broader range of potential researcher misconduct or crimes. For example, NSF officials noted that its OIG primarily investigates grant fraud, while grantee institutions such as U.S. universities bear primary responsibility for ensuring scientists’ compliance with the terms and conditions of its grant awards.

We omitted specific data on the number of investigations by agency, including agencies’ descriptions of the investigations they identified for our review, because DOD deemed the information to be sensitive. The total reflects 2021 data for NIH as of October 2021; all other agencies provided data as of June 2021.

**Ninety Percent of Grant-maker Investigations in Our Review Involved Researchers Who Agencies Determined Had PRC Affiliations**

Grant-making agency data indicated that 90 percent of their research security and integrity investigations included researchers with links to the PRC. However, officials from all five agencies in our review told us that they generally did not base such categorization on nationality or citizenship information, visa status, or research field, which they do not

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track.<sup>52</sup> To respond to our inquiry regarding the extent to which investigations might be related to the PRC, agency officials generally conducted manual reviews of information collected during the course of an investigation or related to the grant award in question.<sup>53</sup> For example, officials from several agencies noted that they considered an investigation to have a link to PRC-affiliated entities if it alleged that a researcher, irrespective of any citizenship information that may be available, had failed to disclose foreign affiliations with or grant support from a PRC-affiliated entity.<sup>54</sup> Compiled agency data for DOD, DOE, NASA, NIH, and NSF indicated that 90 percent of the 310 researchers under investigation from 2016 through 2021 had such ties.<sup>55</sup>

However, officials explained that they did not identify these cases based on individuals' citizenship information, visa status, or research fields. Specifically:

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<sup>52</sup>Officials we interviewed from some agencies referred to "nationality" and others referred to "citizenship." While officials may sometimes use the terms "nationality" and "citizenship" interchangeably, they are not synonymous. For example, under U.S. law, "national of the United States" is defined as (A) a citizen of the United States, or (B) a person who, though not a citizen of the United States, owes permanent allegiance to the United States. 8 U.S.C. § 1101(a)(22).

<sup>53</sup>Agency officials identified various efforts to track investigations related to foreign influence or research security. For example, at the time of our request, NIH was already tracking affiliations with the PRC for researchers under investigation. NASA officials indicated that they were also attempting to characterize and track such cases based on an increasing number of referrals beginning in 2018.

<sup>54</sup>Agencies in our review considered citizenship among potential criteria for determining that an investigation may be related to China, but agency officials emphasized that this information is not readily available and not systematically tracked. Agency officials noted that they reviewed cases for information such as researcher associations with PRC-affiliated entities or talent recruitment programs.

<sup>55</sup>Data on investigations was reported by the OIGs of NSF, NASA, DOE, and DOD, and NIH's Office of Extramural Research. We included this NIH office because NIH, an operational division of HHS, carries out its own grant compliance reviews through this office. NIH does not have an internal OIG but is overseen by the HHS OIG. NIH's Office of Extramural Research differs from the OIGs in that it primarily carries out grant compliance reviews specifically to address concerns about undisclosed or inadequately addressed conflicts of interest, rather than investigating a broader range of potential researcher misconduct or crimes. For example, NSF officials noted that its OIG primarily investigates grant fraud, while grantee institutions such as U.S. universities bear primary responsibility for ensuring scientists' compliance with the terms and conditions of its grant awards. We did not independently review the substance of these investigations.

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- Officials from all five grant-making agencies emphasized that they do not systematically collect information on the nationality or citizenship of researchers related to researcher investigations. Further, these officials said that, even if they collected such information, they would not use it as criteria to begin investigations.
  - Investigation data from the five agencies generally do not include the visa status of individuals associated with the investigations. Furthermore, NSF officials explained that the researchers under investigation are not often foreign students or visiting scholars who would be in the country only temporarily on student or scholar visas. Rather, they said that the individuals under investigation are more often researchers, or “principal investigators” overseeing federally funded university research, who are generally permanent staff of the institutions to which federal agencies provide grant funding.<sup>56</sup> NIH officials also told us that it was their impression that most of those under investigation are American scientists.<sup>57</sup>
  - Officials from the five grant-making agencies in our review also do not consider the field or sensitivity of research in question during investigations. For example, some noted that their investigations are intended to preserve the integrity of all the research they fund regardless of the fields of research in question, which they do not systematically track. Others explained that the preponderance of research funded with grants from their agencies was fundamental research intended for open publication.<sup>58</sup>

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<sup>56</sup>Federal agencies generally provide grants to an institution, such as a university, rather than to a specific researcher, for administration. The grantee then designates scientists as principal investigators or key personnel.

<sup>57</sup>The five agencies in our review generally do not track data on citizenship and visa status of individuals under investigation.

<sup>58</sup>National Security Decision Directive 189, issued September 21, 1985, established national policy for controlling the flow of science, technology, and engineering information produced in federally funded fundamental research at colleges, universities, and laboratories. The directive defines fundamental research to mean basic and applied research in science and engineering, the results of which ordinarily are published and shared broadly within the scientific community, as distinguished from proprietary research and from industrial development, design, production, and product utilization, the results of which ordinarily are restricted for proprietary or national security reasons. U.S. export control regulations define “fundamental research” similarly to the directive, though the EAR also includes mathematics in the scope of its definition. See 15 C.F.R. § 734.8(c) for the EAR definition, and 22 C.F.R. § 120.11(a)(8) for the ITAR definition.

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Grant-maker Investigations  
Have Resulted in Agency and  
University Administrative  
Actions to Address Foreign  
Influence

As a result of investigations initiated from 2016 through 2021, grant-making agencies—particularly NIH, which accounted for about 73 percent of the individuals under investigation in our review—addressed a number of violations that could threaten the integrity of university research.<sup>59</sup> As of October 2021, 94 percent of NIH investigations into researchers of concern had uncovered at least one compliance violation that NIH deemed serious, such as a failure to disclose foreign conflicts of interest (e.g., foreign affiliations, grant funding, or talent recruitment program participation), according to NIH data. As a result, NIH reported that at least 76 percent of individuals under investigation were no longer associated with grant-funded research or other grant-related responsibilities, primarily through resignation or actions taken by grant-recipient institutions, including termination or exclusion from grant-funded research.<sup>60</sup> In addition, NIH officials noted that because many of their investigations remained ongoing, they expected the number of actions taken in response to violations to rise.<sup>61</sup>

NSF OIG data on closed fraud cases indicated that their investigations substantiated violations made by 33 percent of investigated individuals, resulting in referrals to DOJ and recommendations for administrative actions including debarments, award terminations, and prohibition on serving as an NSF grant reviewer.<sup>62</sup> Data from NASA and DOE indicated that closed investigations had generally resulted in few administrative remedies. For example, in some cases these agencies reported that they took no action because allegations were unsubstantiated, because an individual independently departed from a university position prior to the

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<sup>59</sup>We omitted specific data on the number of investigations used to calculate the percentages by agency in this section because DOD deemed the information to be sensitive.

<sup>60</sup>According to agency officials and documents, agencies can take a range of administrative or enforcement actions when an allegation of failure to disclose required information has been substantiated. These actions include asking the researcher's university to open an investigation, suspending the grant, or referring the case for prosecution. See [GAO-21-130](#).

<sup>61</sup>In addition to penalties imposed related to existing grants, NIH data indicate that the agency had removed about 60 percent of investigated researchers from future NIH grant eligibility.

<sup>62</sup>NSF OIG investigation data reflect information on closed OIG investigations. NSF data indicated that the agency had taken actions in response to such OIG investigations. For example, NSF officials noted that they had taken a range of actions against individuals and entities affiliated with foreign talent programs or that received foreign funding.

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conclusions of investigations, or because of potential overlap with related law enforcement investigations.

Grant-maker data indicated that about 20 percent of the investigations included in our review were related to potential technology transfers in addition to the potential researcher violations. The prevalence of such allegations, however, varied significantly by agency, ranging from zero to 100 percent. For example, NSF OIG officials suggested that none of its investigations considered the risk of export control violations, in large part because the agency supports fundamental research, which is intended for open publication and not subject to export controls regulations. Officials from NASA told us that all of its investigations at least contemplate the possibility of technology transfer because of its responsibility for the civilian space program and other sensitive aeronautics and space research. Officials explained that they may refer any potential export control violations uncovered during the course of fraud or compliance investigations to appropriate agencies, such as DOJ, State, or Commerce, for investigation.<sup>63</sup>

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### It Is Difficult to Identify Trends in DOJ Investigations Related to Federally Funded University Research Security Because DOJ Data Do Not Specifically Track Such Cases

While grant-making agencies have increased enforcement actions related to U.S. university research security, it is difficult to assess whether law enforcement agency investigations of, or convictions related to, transfer of university research have increased. In particular, the data systems of DOJ's FBI and NSD, which oversees DOJ's counterintelligence and export control investigations including those related to espionage and technology transfer, are not designed to systematically document which investigations are related to federally funded research at U.S. universities. This complicates efforts to identify and understand the outcomes of law enforcement investigations of potential technology transfers or other U.S. university research security issues. Officials from both the FBI and NSD told us that they generally track investigations based on the section of criminal or civil legal code that was potentially violated, several of which may be related to university research security.

FBI officials explained that their case management system is not able to readily identify technology transfer investigations specifically related to federally funded research at U.S. universities. They noted that such cases may be included in several categories based on the potential violation, but data do not capture specifics of an investigation such as whether or

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<sup>63</sup>DOD officials noted that they may undertake investigations related to export controls enforcement when there is a nexus to DOD. However, they excluded such investigations from the data provided to us.

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not it involves federal funding or a U.S. university. Therefore, according to these officials, there is no way to query the system for such investigations in general or to identify information about specific technology or research that may have been transferred or the foreign students and scholars who may be involved.<sup>64</sup>

NSD officials similarly explained that their case management system was not configured to readily identify investigations related to federally funded university research.<sup>65</sup> They also confirmed that they did not maintain a comprehensive list of cases related to the China Initiative, which was active from November 2018 through February 2022.<sup>66</sup>

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<sup>64</sup>FBI officials explained that it may be possible to identify some cases specifically related to our inquiry, but it would require manual review of more than 1,000 potentially relevant cases, each of which potentially includes hundreds of related documents they would have to individually review for references to things such as U.S. universities and federal research funding. They also noted that the FBI's National Counterintelligence Task Force had not obtained a list of, or aggregated data on, individual investigations from each partner agency. They explained that the task force is intended to provide a forum for participating counterintelligence, national security, and other government entities to identify best-practice investigative guidelines and processes.

<sup>65</sup>NSD officials told us that they had identified about 12 cases that are related to academia, but that theft or transfer of information is not an element of most of those cases.

<sup>66</sup>DOJ officials said that the best information about cases under the China Initiative, operational from November 2018 through February 2022, was collected on the agency's China Initiative web pages as maintained by DOJ's Office of Public Affairs. However, officials from the Office of Public Affairs explained that the web pages were not intended to be a comprehensive list of cases. Instead, they select cases for inclusion on the China Initiative web page from among those for which DOJ's Office of Public Affairs has previously issued a press release. DOJ's web pages on the China Initiative were archived after its termination in February 2022.



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**Factors Limiting Agencies' Ability to Prosecute Technology Transfer**

Technology transfer investigations do sometimes result in penalties related to export controls and espionage, but Department of Justice (DOJ) officials noted that cases involving the transfer of legally controlled information are rare. They also said that fraud-related charges such as visa fraud, wire fraud, and making false statements might be more appropriate and viable, depending on the facts of the case. DOJ and grant-making agency officials noted that it is difficult to prosecute certain technology transfer cases for several reasons, including the amount of time required; the challenge in proving that an actual technology transfer occurred; and, if such a transfer did occur, that it was intended and understood to be illegal. For example, DOJ officials explained that even when a transfer does occur, the government might have difficulty proving the information was export-controlled technology or constituted a trade secret, which may make prosecutions under related statutes not viable.

Source: GAO analysis of agency data and interviews. | GAO-23-106114

Both NSD and FBI officials emphasized that the nationality of a potential defendant is not pertinent to decisions during initiation or prosecution of an investigation, regardless of whether the investigations were identified as part of the China Initiative. Rather, they said that such decisions and efforts are based on the potential merits of the case and available evidence, which can lead to a wide variety of case trajectories and outcomes.

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**Agency Officials Noted That Assessing the Overall Value or Impact of Technology Transferred to Benefit Foreign Countries Such as the PRC Would Be Challenging**

According to officials from the five grant-makers we reviewed, DOJ, and lawmakers, the risk of technology transfer is ill-defined and unquantified,

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particularly in a university setting.<sup>67</sup> For example, DOD OIG officials were unaware of any attempts to estimate the value or impact of new technologies. In addition, an NSF-commissioned 2019 report on research security found that the scale and scope of the problem was poorly defined and that stakeholders lacked a common understanding of foreign influence in U.S. fundamental research, the associated risks, and the possible detrimental effects of potential restrictions on research.<sup>68</sup> Congressional committees have also expressed concern that there has been too much reliance on anecdotal evidence. For example, in an April 2021 joint letter, the U.S. House of Representatives Committee on Science, Space, and Technology and Committee on Armed Services asked the administration to provide a clear explanation of the risks to research integrity and security posed by undue foreign influence.

Officials from several grant-making agencies, DOJ, and the FBI have not undertaken analysis to determine the economic value or potential national security implications of technology transfers to foreign countries such as the PRC, and identified several challenges that limit the feasibility of doing so. In particular, such officials noted that it is difficult to predict (1) what fundamental research would result in technologies important for the U.S. economy or national security, and (2) what the economic or strategic value of such technologies would be. For example, NSF officials emphasized that the very reason that NSF invests in a wide range of fundamental research areas and projects is because no one can predict which research will result in future innovations and technology

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<sup>67</sup>Some non-governmental entities have estimated the economic cost of technology transfer to the PRC, but not necessarily specifically for university research or for the benefit of the PRC, and generally highlight the lack of available information. For example, a study published in 2017 by the Commission on the Theft of American Intellectual Property determined that China's theft of U.S. intellectual property amounted to between \$225 billion and \$600 billion annually. However, this estimate was based on counterfeit goods, pirated software, and theft of trade secrets, not theft of university research, and was not specific to the PRC. The Commission on the Theft of American Intellectual Property describes itself as an independent and bipartisan initiative of leading Americans from the private sector, public service in national security and foreign affairs, academia, and politics. See The National Bureau of Asian Research Commission on the Theft of American Intellectual Property, *Update to the IP Commission Report: The Theft of American Intellectual Property: Reassessments of the Challenge and United States Policy* (February 2017).

<sup>68</sup>JASON is an independent scientific advisory group that provides consulting services to the U.S. government on matters of defense science and technology. The National Science Foundation asked JASON to review threats to fundamental research and potential actions to address these threats. See JASON, *Fundamental Research Security*, JSR-19-21 (McLean, VA: Dec. 5, 2019).

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development. NASA officials similarly explained that they did not know how best to estimate the future value of any research, particularly fundamental research, that was transferred to foreign countries.

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### Stakeholders Have Offered Varying Views on Balancing Protection of U.S. University Research against Potential Adverse Effects of These Efforts

Stakeholders such as university faculty and officials from university and Asian and Asian-American associations have offered varying views on balancing the protection of federally funded U.S. university research against the potential adverse effects of some research security efforts. In letters to Congress and DOJ, such groups have emphasized the importance of protecting research and technologies from transfer to foreign countries, including China. For example, the American Council on Education has noted the importance of protecting national security interests associated with research conducted at its member universities. In a 2020 letter to Congress, the council explained that member universities share a common interest with the government in ensuring that intellectual property, sensitive data, and other government information is not susceptible to academic exfiltration, espionage, or exploitation.<sup>69</sup> In addition, hundreds of professors and faculty, including from institutions such as Stanford, Princeton, Yale, and the Universities of Pennsylvania and Michigan, have separately sent letters to DOJ voicing concerns about PRC-endorsed activities such as intellectual property theft and espionage.

However, these stakeholders have also voiced concerns about some potential adverse effects of the increased attention paid to research security, particularly when it focuses specifically on the threat posed by the PRC. Primary among such concerns is the potential for racial bias against Asian and Asian-American researchers, who may be improperly associated with the risk posed by the PRC. Stakeholders believed that such bias may have already negatively affected U.S. technological advantage and cultural exchange opportunities, and damaged the careers of researchers.

- *Lost technical and innovation advantage resulting from fewer talented foreign students choosing to study in the United States.* University faculty as well as officials from two leading university associations—the Association of American Universities and the Council on

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<sup>69</sup>The American Council on Education, a membership organization of more than 1,700 colleges and universities, sent this letter on behalf of ACE and 12 additional associations of U.S. colleges and universities, including the Association of American Universities. See American Council on Education, *Letter to the Senate Homeland Security and Government Affairs Committee on the Safeguarding American Innovation Act* (Washington, D.C.: Jul. 21, 2020).

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Government Relations—explained to us their concern that the increased scrutiny and rhetoric regarding malign foreign influence, particularly related to the PRC, would damage the pipeline of foreign talent. They believe that international contributors have been invaluable to the U.S. research community and instrumental to the U.S. innovative advantage. They noted that unfounded research security investigations may dissuade talented students and scholars from choosing to pursue research at U.S. universities, which could pose long-term consequences for U.S. leadership in cutting-edge STEM fields.

- *Lost opportunity for cultural exchange.* University faculty emphasized that a key benefit of programs for international students and scholars is the opportunity to experience U.S. culture and democracy.
- *Damaged careers of students and scholars of Asian descent based on potentially unfounded accusations.* Officials from Asian and Asian-American and university associations, among others, have voiced concerns that potentially unfounded accusations may have ruined the careers of innocent foreign scientists, many of Asian descent, and have come to the defense of researchers they believe to have been wrongfully accused in investigations under DOJ's China Initiative.<sup>70</sup> They expressed concern that the visibility of cases involving researchers of Chinese descent has affected students and researchers, who may feel dissuaded from pursuing opportunities in the United States. In press releases welcoming DOJ's February 2022 announcement that it was ending its China Initiative, several Asian and Asian-American associations noted that work remained to address racial bias against Asian and Asian-American students and scholars.

Officials from DOJ and all five grant-making agencies in our review have highlighted the importance of avoiding discrimination and identified some steps they are taking to prevent it. As noted above, officials emphasized that investigations are initiated on the basis of specific facts or objective behaviors suggesting a crime or serious compliance violation, not an individual's personal characteristics. DOJ discontinued its China Initiative in February 2022. In announcing the ending of the initiative, DOJ noted that a broader approach is necessary to address the threats the United States faces from additional hostile nations such as Russia, Iran, and North Korea. DOJ also acknowledged that the China Initiative may have given rise to a harmful perception that DOJ applies a lower standard to

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<sup>70</sup>As of March 2022, some investigations previously included in the China Initiative remained ongoing.

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investigate and prosecute criminal conduct related to China or that it treats people with racial, ethnic, or familial ties to China differently. In addition, the White House Office of Science and Technology Policy has made public statements emphasizing the importance of avoiding racial bias in research security efforts. For example, an August 2021 statement by its Director noted that policy must avoid fueling xenophobia or prejudice, as doing so is fundamentally unacceptable and will make it harder to attract the best scientific minds from around the world. A January 2022 statement from the office reiterated that if policies intended to address research security challenges significantly diminish U.S. entities' ability to attract global scientific talent, or if they fuel xenophobia against Asians and Asian-Americans, they will have done more damage than the actions of America's adversaries.

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## Conclusions

Each year, thousands of foreign students and scholars apply for visas and ultimately enter the United States to study and conduct research in STEM fields at U.S. universities. These visitors, a third of whom are Chinese nationals, boost our economy and help drive U.S. research and innovation. At the same time, the United States also must safeguard the federally funded research to which these students and scholars may have access. U.S. government agencies have increasingly taken steps to counter the potential transfer of university research to foreign countries, particularly China. For example, grant-making agencies have increased investigations and taken steps to address grant recipients' failures to make required disclosures of conflicts of interest. These conflicts of interest often include affiliations with the PRC that may threaten the integrity of federally funded research or lead to technology transfers.

In this context, U.S. agencies and others have identified factors that indicate the types of foreign students or scholars who may pose a greater risk of transferring technology from U.S. universities. ICE already maintains information in its SEVIS database related to several of these factors, including country of citizenship and level of education. However, ICE has not completed a required assessment to understand whether it needs to update SEVIS to better capture information related to students and scholars who may pose a greater risk for technology transfer. Furthermore, data related to other risk factors already required in SEVIS, such as employer information, are incomplete. More complete data, and a better understanding of the information needed to identify students who present the highest risk for the potential transfer of university research, could strengthen U.S. government efforts to identify and assess risks to U.S. research and development.

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## Recommendations for Executive Action

We are making the following two recommendations to ICE.

The Director of ICE should establish milestones for completing the assessment required by NSPM-33 section 4(d)(ii). (Recommendation 1)

The Director of ICE should take steps to improve employer information in SEVIS or otherwise update the records of foreign students approved for OPT as appropriate. (Recommendation 2)

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## Agency Comments and Our Evaluation

We provided a draft of this report to DHS, DOD, DOE, DOJ, the Department of Education, HHS (NIH), NASA, NSF, and State for review and comment. DHS provided written comments on our August 2022 sensitive report, which are reproduced in appendix II. In these comments, DHS concurred with the recommendations directed at ICE. DHS, DOE, NIH, NASA, NSF, and State provided technical comments, which we incorporated as appropriate. DOD, DOJ, and the Department of Education informed us that they had no comments.

In its written comments, DHS provided information about the actions ICE plans to take to address the recommendations. In response to recommendation 1, DHS noted some of the privacy and other challenges to collecting the information in SEVIS described in NSPM-33. ICE plans to work with State to address these challenges and establish the milestones for completing the assessment required by NSPM-33 section 4(d)(ii). In response to recommendation 2, DHS described steps ICE is exploring to improve employer data in SEVIS for students participating in OPT. DHS also noted that many OPT participants are in fields of study that are associated with less risk of technology transfer, such as liberal or performing arts. Additionally, DHS noted that the compliance rate for students in STEM OPT identifying their employer was 99.9 percent. However, STEM OPT is a specific extension of post-completion OPT for students who have completed that training and are studying in areas related to STEM. As we noted in the report, employment under any type of OPT must be in a job directly related to the foreign student's field of study. As such, students in a field of study related to STEM can also participate in pre- and post-completion OPT, for which we found that 60 percent and 12 percent of the records we reviewed were missing employer name information required by ICE. As stated in our report, the U.S. government has identified employment and employment history as a potential risk factor for the transfer of technology.

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We are sending copies of this report to the appropriate congressional committees and the Secretaries of Defense, Education, Energy, Health and Human Services, Homeland Security, and State; the Attorney General of the United States; the Administrator of the National Aeronautics and Space Administration; and the Director of the National Science Foundation. In addition, the report is available at no charge on the GAO website at <https://www.gao.gov>.

If you or your staff have any questions about this report, please contact me at (202) 512-8612 or [gianopoulosk@gao.gov](mailto:gianopoulosk@gao.gov). Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made key contributions to this report are listed in appendix III.



Kimberly Gianopoulos  
Director, International Affairs and Trade

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*List of Requesters*

The Honorable Steve Chabot  
Ranking Member  
Subcommittee on Asia, the Pacific, Central Asia, and Nonproliferation  
Committee on Foreign Affairs  
House of Representatives

The Honorable Clay Higgins  
Ranking Member  
Subcommittee on Border Security, Facilitation, and Operations  
Committee on Homeland Security  
House of Representatives

The Honorable Jim Banks  
House of Representatives

The Honorable Dan Crenshaw  
House of Representatives

The Honorable Scott DesJarlais  
House of Representatives

The Honorable Dr. Neal P. Dunn  
House of Representatives

The Honorable Matt Gaetz  
House of Representatives

The Honorable Mike Gallagher  
House of Representatives

The Honorable Vicky Hartzler  
House of Representatives

The Honorable Trent Kelly  
House of Representatives

The Honorable Debbie Lesko  
House of Representatives



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The Honorable Mike Rogers  
House of Representatives

The Honorable Austin Scott  
House of Representatives

The Honorable Elise M. Stefanik  
House of Representatives

The Honorable Michael R. Turner  
House of Representatives

The Honorable Ann Wagner  
House of Representatives

The Honorable Michael Waltz  
House of Representatives

The Honorable Joe Wilson  
House of Representatives

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# Appendix I: Objectives, Scope, and Methodology

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This report is a public version of a sensitive report that we issued on August 2, 2022.<sup>1</sup> Our August report included three objectives, including one on the results of the Department of State’s process for adjudicating visa applications for students and scholars who may pose a risk of transferring university research. State deemed information related to that objective to be sensitive, which must be protected from public disclosure. Consequently, this public version only includes information on objective (1), which assesses the extent to which agencies have identified and collected data related to characteristics of foreign students and scholars in the United States that may indicate risk of transferring university technology, and objective (2), which describes selected agency efforts to counter the transfer of federally funded university research for the benefit of PRC-affiliated entities.<sup>2</sup>

Our analysis of student and scholar data includes applicants for F-1 visas and selected J-1 visas including the Exchange Visitor Program categories that State officials identified as most likely to have access to university research. According to State officials, these categories include foreign students studying at the associate, bachelor’s, master’s, doctoral, and non-degree levels (excluding secondary studies), and “foreign scholars” visiting as professors, research scholars, short-term scholars, and specialists. We excluded foreign students visiting with M-1 visas, which are issued for vocational and other nonacademic studies, because we identified no more than one record per year in the Student and Exchange Visitor Information System (SEVIS) data for 2016 through 2020 with an M-1 visa at the associate, bachelor’s, master’s, or doctoral level of education.

To assess the extent to which agencies have identified and collected data related to characteristics of foreign students and scholars in the United States that may indicate risk of transferring university technology, we reviewed prior GAO reports and agency documents that identified these

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<sup>1</sup>GAO, *China: Efforts Underway to Address Technology Transfer Risk at U.S. Universities, but ICE Could Improve Related Data*, GAO-22-104362SU (Washington, D.C.: Aug. 2, 2022).

<sup>2</sup>This public report also omits certain information that DHS, DOD, and State deemed to be sensitive related to (1) ICE enforcement efforts, (2) detailed information about the number of investigations conducted by the five largest grant-making agencies related to safeguarding research funds awarded to U.S. universities, and (3) the PRC’s talent recruitment and scholarship programs. Although this report provides more limited information on these topics, it uses the same methodology as the sensitive report.

risks.<sup>3</sup> We also analyzed data related to these characteristics for foreign students and scholars active in the United States from calendar years 2016 through 2020, the most recent data available at the time of our request. The Department of Homeland Security's (DHS) U.S. Immigration and Customs Enforcement (ICE) and State maintain these data in SEVIS.

To calculate the number of university students for this objective and the background, we analyzed record-level student data from SEVIS for individuals with either an F-1 or J-1 visa, who were active from 2016 through 2020 and had an associate, bachelor's, master's, or doctoral degree listed as their level of education. Because the SEVIS data contained duplicate records for some individuals, such as those who had transferred schools or had different levels of education in the same year, for analysis requiring a count of unique students, we selected the most recent record for each individual in a given calendar year. As a result, for figures that involve counts of individuals by degree type, for those who may have participated in multiple degree programs within a year (e.g., graduated with a bachelor's degree in May 2016 and started a master's degree program in August 2016), the individuals were only counted once in that year at their most recent level of study. Therefore, our analysis could undercount or overcount certain education levels in a given year. To identify which students or scholars had a science, technology, engineering, or math (STEM) field of study, we used statistical software to match their primary major to the fields of study included at least once in either DHS's 2016 or 2020 STEM Designated Degree Program Lists.

To calculate the number of participants in ICE's optional practical training (OPT) and curricular practical training (CPT) programs and State's student employment and academic training, we analyzed record-level data from SEVIS for individuals with either an F-1 or J-1 visa, who were active from 2016 through 2020. Because the SEVIS data contained duplicate records for some individuals, such as those who participated in multiple training programs, we selected the most recent record for each individual in a given calendar year. As a result, for figures that involve counts of individuals by training type, for those who may have participated in multiple training programs, the individuals were only counted once in a

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<sup>3</sup>We previously reported on characteristics of individual foreign students and scholars, as well as universities, which could indicate risk for technology transfer. See GAO, *Export Controls: Enforcement Agencies Should Better Leverage Information to Target Efforts Involving U.S. Universities*, [GAO-22-105727](#) (Washington, D.C.: June 14, 2022).

year with the most recent characteristics of their employment (e.g., type of OPT program) in that year.

To the extent that student data related to risk factors were required and incomplete, we assessed them against SEVIS requirements as identified by ICE and State officials, and federal internal control standards on data quality.<sup>4</sup> According to ICE regulations and policy requirements, students on post-completion OPT cannot accrue more than 90 days of unemployment and must report to their designated school official within 10 days any changes in the student's employment information. The designated school official is then required to update that employment information in SEVIS within 21 days. To determine the number of post-completion OPT records missing employer name, we analyzed SEVIS records to identify those that were missing this information 121 days after their authorized start date. ICE officials said that the same regulations requiring employer name information in SEVIS for students on post-completion OPT also apply to pre-completion OPT. Therefore, for calculating the number of pre-completion OPT records missing employer name information we used the same 121-day time frame. Because students who participate in STEM OPT are required to have employer information when they apply for the program, we analyzed these SEVIS records to identify those that were missing employer information at the time of their authorized start date. For the analysis of OPT records that were missing employment information, we examined all OPT records associated with an individual and counted them as incomplete if all of the records were missing employment information. We also met with ICE and State officials to discuss our methodologies for calculating the number of students and scholars, SEVIS, and the requirements for students in State's Exchange Visitor Program and ICE's Student Exchange Visitor Program. We determined that student and scholar data from SEVIS were sufficiently reliable for the purposes of describing country of citizenship, level of education, type of exchange program, and certain characteristics of student employment.

To describe the outcomes of selected agencies' activities to counter the transfer of federally funded university research for the benefit of PRC-related entities, we reviewed information on such investigations from the five agencies that provided the largest amount of funding for federal research and development at U.S. universities in 2019. These agencies

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<sup>4</sup>GAO, *Standards for Internal Control in the Federal Government*, [GAO-14-704G](#) (Washington, D.C.: September 2014), Principle 13: Use Quality Information.

were the Department of Defense (DOD), the Department of Energy (DOE), the National Aeronautics and Space Administration (NASA), the National Institutes of Health (NIH) within the Department of Health and Human Services (HHS), and the National Science Foundation (NSF). Together, these agencies accounted for almost 90 percent of federal research and development expenditures at universities in fiscal year 2019. Because research and development spending by NIH accounted for more than 95 percent of all HHS research and development expenditures in fiscal year 2019, we chose to focus our review on NIH, rather than HHS as a whole. Although NIH is a sub-agency of HHS, we refer to NIH as an agency in the report.

NSF, NASA, DOE, DOD, and HHS each have an independent Office of Inspector General (OIG) that conducts oversight of agency activities, including potentially investigating crimes such as fraud related to research grant funding activities. These OIG offices each provided data on investigations related to safeguarding research funds awarded to U.S. universities. Such OIGs might refer their findings to agency management for administrative actions or to DOJ for prosecution. NIH does not have an internal OIG but is overseen by the HHS OIG. In addition to oversight by the HHS OIG, NIH carries out its own grant compliance reviews through its Office of Extramural Research. This office differs from the grant-maker OIGs we included in our analysis in that it primarily carries out grant compliance reviews specifically to address concerns about undisclosed or inadequately addressed conflicts of interest in NIH grant-making activities, rather than investigating a broader range of potential misconduct or crimes. For example, NSF officials noted that its OIG primarily investigates grant fraud, while grantee institutions such as U.S. universities bear primary responsibility for ensuring scientists' compliance with the terms and conditions of its grant awards. For the purposes of illustrating grant-maker efforts to safeguard federally funded U.S. university research, we use "investigation" to refer in general to the activities of the four OIGs and NIH's Office of Extramural Research. For DOD, our reporting focuses on one investigative service and excludes other investigative elements. Discussions with officials from these organizations indicated that potentially relevant investigations by those organizations would likely be rare and that identifying them would require manual review of thousands of investigations. Data we collected may not represent all grant-making agency efforts to safeguard university research, in part because of information related to investigations that were ongoing at the time of our request. In addition, as officials indicated that there was a high degree of collaboration on some investigations, to help eliminate double counting, we requested from each agency data on

investigations for which it was the lead investigator; however, some duplication may remain.

We also reviewed information from the Department of Justice (DOJ), including the Federal Bureau of Investigation (FBI), about prosecutions related to federally funded research at U.S. universities. We interviewed officials from the DOD, DOE, NASA, and NSF OIGs and NIH's Office of Extramural Research to obtain their perspectives on recent cases related to the security and integrity of U.S. university research funded by their agencies. We discussed such cases with officials from DOJ and the FBI to obtain their perspectives on law enforcement efforts related to federally funded U.S. university research. We also met with officials from university associations to discuss university research security topics and related prosecutions. We selected these groups on the basis of our previous efforts to identify university associations with roles related to research security. For context, we also met with Asian-American association and academic research security officials.

The performance audit upon which this report is based was conducted from June 2020 to August 2022 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate, evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives. We subsequently worked with DOD, DHS, and State from August 2022 to November 2022 to prepare, in accordance with generally accepted government auditing standards, this nonsensitive version of the original sensitive report for public release.

# Appendix II: Comments from the Department of Homeland Security

U.S. Department of Homeland Security  
Washington, DC 20528



**Homeland  
Security**

October 20, 2022

Kimberly Gianopoulos  
Director, International Affairs and Trade  
U.S. Government Accountability Office  
441 G Street, NW  
Washington, DC 20548

Re: Management Response to Draft Report GAO-23-106114, "CHINA: Efforts Underway to Address Technology Transfer Risk at U.S. Universities, but ICE Could Improve Related Data"

Dear Ms. Gianopoulos:

Thank you for the opportunity to comment on this draft report. The U.S. Department of Homeland Security (DHS or the Department) appreciates the U.S. Government Accountability Office's (GAO) work in planning and conducting its review and issuing this report.

DHS leadership is pleased to note GAO's recognition of the importance of overseeing the U.S. Immigration and Customs Enforcement (ICE) Homeland Security Investigations (HSI) Student and Exchange Visitor Program (SEVP) to protect national security interests and prevent technology transfer. ICE SEVP manages schools, nonimmigrant students in the "F" and "M" visa classifications and their dependents, while the U. S. Department of State (DoS) manages the Exchange Visitor Programs, nonimmigrant exchange visitors in the "J" visa classification and their dependents. ICE and DoS both use the Student and Exchange Visitor Information System (SEVIS) to track and monitor: (1) schools; (2) exchange visitor programs; and (3) F, M and J nonimmigrants while they visit the United States and participate in the United States education system.

It is important to clarify, however, that the DHS authority for the data collection of approved institutions of higher education, including other approved educational institutions, and designated exchange visitor programs in the United States is predicated on the requirements of 8 U.S.C. § 1372, "Program to collect information relating to nonimmigrant foreign students and other exchange program participants." Accordingly, collecting additional information would require Congressional action and regulatory

**Appendix II: Comments from the Department  
of Homeland Security**

changes to authorize the collection of information specified by “National Security Presidential Memorandum 33: U.S. Government Supported Research and Development National Security Policy” (NSPM-33), dated January 2021. Furthermore, the National Science and Technology Council issued “Guidance for Implementing NSPM-33,”<sup>1</sup> dated January 2022, does not address such reporting requirements, nor reference any additional requirements for DHS with respect to such an expansion of reporting requirements. As GAO even noted within the draft report, SEVIS was not created to track information related to technology transfers. Therefore, it would take action outside of the Department’s scope of authority to authorize or utilize SEVIS for collecting and tracking information about student and exchange visitor conduct preceding the application for an F, J, or M nonimmigrant visa, including education, affiliations, or employment in their home country.

The draft report contained two recommendations with which the Department concurs. Enclosed find our detailed response to each recommendation. DHS previously submitted technical comments addressing several accuracy, contextual, sensitivity and other issues under a separate cover for GAO’s consideration.

Again, thank you for the opportunity to review and comment on this draft report. Please feel free to contact me if you have any questions. We look forward to working with you again in the future.

Sincerely,

JIM H  
CRUMPACKER

Digitally signed by JIM H  
CRUMPACKER  
Date: 2022.10.20 15:41:47 -04'00'

JIM H. CRUMPACKER, CIA, CFE  
Director  
Departmental GAO-OIG Liaison Office

Enclosure

<sup>1</sup> <https://www.whitehouse.gov/wp-content/uploads/2022/01/010422-NSPM-33-Implementation-Guidance.pdf>



**Enclosure: Management Response to Recommendations  
Contained in GAO-23-106114**

GAO recommended that Director of ICE:

**Recommendation 1:** Establish milestones for completing the assessment required by NSPM-33 section 4(d)(ii).

**Response:** Concur. As discussed with GAO on June 23, 2022, ICE HSI SEVP will work with Department of State counterparts to establish milestones for completing an assessment of the regulatory and technical updates necessary to have relevant educational institutions report information in SEVIS related to technology transfer risks at U.S. Government-supported research and development programs, as described in NSPM-33. The Department of State's implementation of the NSPM-33 will inform and impact ICE's plans to develop milestones for completing the assessment and to take into consideration legal and other hurdles as described below.

At present, DHS is not authorized to collect information identified in this GAO report pertaining to:

- current and prior research and development affiliations and projects,
- current and pending participation in foreign government-sponsored talent recruitment programs,
- employment and employment history information pertaining to such activities outside of the United States, nor
- prior research advisors.

Further, ICE can only collect personally identifiable information that is directly relevant and necessary to SEVP's mission and purpose. Expanding the collection of data to all information described in NSPM-33 would cause ICE to be noncompliant with requirements in the "Privacy Act of 1974," as amended, related to records maintained on individuals (see 5 U.S.C. §552a).

Moreover, the new information required under NSPM-33 would increase the public's burden in complying with SEVP requirements in contrast to a December 13, 2021, Executive Order (EO) 14058, "Transforming Federal Customer Experience and Service Delivery to Rebuild Trust in Government," which directed agencies to reduce administrative burdens and paperwork requirements. In a memorandum dated March 22, 2022, "Paperwork Reduction Act Burden Reduction Initiative," the DHS Chief Information Officer directed components to cut burden hours by 10 percent. The new information to be

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**Appendix II: Comments from the Department  
of Homeland Security**

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collected and placed in SEVIS, as envisioned by NSPM-33, is in opposition to the objectives of EO 14058 and will only increase burden hours on the public.

Estimated Completion Date (ECD): July 31, 2023.

**Recommendation 2:** Take steps to improve employer information in SEVIS or otherwise update the records of foreign students approved for OPT [optional practical training] as appropriate.

**Response:** Concur. The ICE HSI SEVP continues to review and improve existing processes, including assessing the availability and completeness of employer information in SEVIS for students participating in OPT. For example, ICE HSI SEVP is working to expand the capabilities of the SEVIS portal to collect updated information of individuals who have obtained employment or departed the country. In addition, ICE is exploring options to streamline reporting of employers including possibly moving from free text entries of employer names that can create variability to a uniform naming option.

It is important to note that 99.9 percent of individuals participating in science, technology, engineering, and mathematics (STEM) OPT report an employer in SEVIS, and that 88 percent of students participating in non-STEM OPT report an employer. SEVP continues to monitor and enforce the requirements for complete compliance but notes that having the name of an employer provides little basis to assess the risk of a technology transfer. Further, the GAO draft report does not make a strong connection between technology transfers by nonimmigrant students working at U.S. businesses; but instead notes statements from government officials that most of the people under investigation are American scientists.

For example, the National Science Foundation officials “explained that the researchers under investigation are not often foreign students or visiting scholars who would be in the country only temporarily on student or scholar visas. Rather, they said the individuals under investigation are more often researchers, or ‘principal investigators’ overseeing federally funded university research, who are generally permanent staff of the institutions to which the federal agencies provide grant funding.”

Foreign students approved for OPT work in a variety of fields. Many students who are approved for OPT may be in the liberal or performing arts and would have less likelihood of technology transfer risk. To the extent there is a risk of technology transfers by foreign students at U.S. companies, STEM students would likely have greater access to technologies, and their compliance rate for identifying their employer is currently 99.9 percent. Most students working for advanced technology companies include employer information because they do not want to

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**Appendix II: Comments from the Department  
of Homeland Security**

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risk a status violation for failing to report. As for the 12 percent of non-STEM OPT participants who did not have an employer listed, there could be several reasons, including unemployment, leaving the country, forgetting to inform the Designated School Official (DSO) of the employer's name, or failure of the DSO to input the information into SEVIS.

ICE will continue to (1) take steps to improve its ability to capture student employer data as well as data on which students remain in the United States during their OPT authorized period, and (2) look for ways to make uniform entries of employer information in SEVIS by reducing or eliminating free text fields that can create variability.

ECD: July 31, 2023.

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# Appendix III: GAO Contacts and Staff Acknowledgments

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## GAO Contact

Kimberly Gianopoulos at (202) 512-8612 or [gianopoulosk@gao.gov](mailto:gianopoulosk@gao.gov).

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## Staff Acknowledgments

In addition to the contact named above, Joseph Carney (Assistant Director), Rachel Girshick (Analyst-in-Charge), Katie Bolduc, Debbie Chung, Larissa Barrett, and Christopher Keblitis made key contributions to this report. Ashley Alley, Justin Fisher, Frances Tirado, Kathryn Bernet, and Erin O'Brien provided technical assistance.

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