



The national evaluation
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Program Consortium

Data Brief

From the DPC Coordination and Evaluation Center at UCLA

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Self-reported effects of the COVID-19 pandemic on research activities and access to mentors from the 2021 Enhance Diversity Study, Student Annual Follow-up Survey

SUMMARY: The trajectory for undergraduate students to becoming a STEM researcher is complex with many transition points and events that can alter the path (McCreath et al, 2017). The COVID-19 pandemic led to disruptions in every aspect of life worldwide. This brief describes self-reported effects of the COVID-19 pandemic on research activities among participants in the Enhance Diversity Study (EDS) during the 2021 EDS Survey administration. Analyses presented in this brief show that the pandemic adversely affected respondents' ability to conduct research (STU-11). The analysis further documented that the pandemic also impacted respondents' access to mentors (STU-10) with over half of respondents experiencing a significant decrease in access to mentors since the start of the pandemic. While these data represent a snapshot of the impact of the COVID-19 pandemic on research experiences and access to mentors, it suggests more research is needed to understand the differences in the long-term effects on the career trajectories and mentoring activities of EDS participants. Future studies can examine how experiences during the COVID-19 pandemic alter the trajectory of the following student-centered DPC hallmarks: Intent to pursue a career in biomedical research (STU-7); Persistence in biomedical degree or other formal research training program (STU-9); Frequent receipt of mentoring to enhance success in the biomedical pathway (STU-10); and Participation in mentored or supervised biomedical research (STU-11).

Introduction

Every spring, the Enhance Diversity Study (EDS) administers surveys to participants who are current or former students at the university campuses that have Building Infrastructure Leading to Diversity (BUILD) programs (Norris et al., 2020). The COVID-19 pandemic led to disruptions in every aspect of life worldwide, and university campuses had to drastically alter the way they functioned, with instruction, mentoring, and research activities shifting to virtual spaces or closing campuses altogether (Grineski et al., 2022). Items were added to the 2021 EDS Student Annual Follow-Up Survey (SAFS) to understand how the COVID-19 pandemic might influence the educational and career trajectory of EDS participants. This brief describes the self-reported effects of the COVID-19 pandemic on SAFS respondent's research and mentoring activities. Specifically:

1. Did respondents decide to change research interests or topics because of the COVID-19 pandemic? Are there differences in any observed change by gender identity, race/ethnic identity, BUILD program involvement, major, campus type, or campus Region?
2. Did respondents experience any changes in access to mentors since March 2020 when the COVID-19 pandemic started in the United States? Are there differences in any observed change by gender identity, race/ethnic identity, BUILD program involvement, major, campus type, or campus Region?
3. Did respondents experience any changes in opportunities to conduct research since March 2020? Are there differences in any observed change by gender identity, race/ethnic identity, BUILD program involvement, major, campus type, or campus Region?

The 2021 SAFS was administered between January 27 and July 15, 2021, and included the following three items of focus:

1. Have you decided to change your research interests or topics because of the COVID-19 pandemic? With response options: Not at all, Somewhat, Very much, or Not applicable/Choose not to answer.
2. Since March 2020 when the COVID-19 pandemic started in the US, please indicate any changes you experienced in access to mentors, with response options: Decreased a lot, Decreased a little, Did not change, Increased a little, Increased a lot, or Can't rate.
3. Since March 2020 when the COVID-19 pandemic started in the US, please indicate any changes you experienced in opportunities to conduct research, with response options: Decreased a lot, Decreased a little, Did not change, Increased a little, Increased a lot, or Can't rate.

Data

A total of 8,561 people participated in the 2021 SAFS. Of those, 19% (n=1,619) reported having an opportunity to conduct their own research or to participate in scientific research directed by others in the past 12 months and were presented with item 1 (Table 1). Subgroup differences were examined only for those who reported conducting research in the previous year (Table 2). Items 2 and 3 were presented to all survey respondents with over 90% (n=7,886) completing them (Tables 3-6) Differences by subgroups were examined using Chi-square analyses, excluding the "Can't Rate" responses.

Gender Identity. Overall, nearly one-third (30%) of the respondents identify as a Man, 66% identify as a Woman, and 4% selected Other Gender Identity, which includes respondents who identify as a Trans Man (0.4%), as a Trans Woman (0.1%), as Gender queer/ Gender non-conforming (2%), those selecting Different identity (0.4%) and those choosing not to answer (2%).

Race/Ethnic Identity. Overall, 21% of respondents identify as Asian, 17% identify as Black or African American, 25% identify as Hispanic, Latina/o, or Spanish Origin, 19% identify as White, and 17% identified with an Other Identity, an

aggregate category of those who identify as Native American, Indigenous, First Nations, American Indian or Alaska Native (0.5%), Middle Eastern or North African (3%), Native Hawaiian or Other Pacific Islander (0.2%), those who selected 2 or more categories (13%), and those who selected the survey option Other Race, Ethnicity or Origin (0.5%).

BUILD Program Involvement.

Involvement with a BUILD program was defined by beginning at least one of the following BUILD activities by September 2020, the fall prior to the survey: Scholar activities: these respondents are the most intensely treated and supported group; Associate activities: a less intensely treated group often participating in a subset of intervention supports; and URE activities: in which respondents participate in BUILD-affiliated student-directed research or a mentored undergraduate research experience (Davidson et al, 2017). BUILD-involved respondents comprised 11% of total respondents.

Undergraduate Major. Major was defined using the Diversity Program Consortium (DPC)'s list of undergraduate biomedical majors. This list reflects institutional offerings and funding offered through the NIH and is categorized into three subgroups: Biomed – Natural Science (52%), Biomed – Social Science (11%), or Non-Biomed (36%) (Diversity Program Consortium, 2022).

Campus Type. To characterize the campus climate, the study sites were categorized into three campus types: Historically Black Colleges and Universities (HBCU), defined as a historically Black college or university established before 1964 whose primary mission is to educate Black Americans (13% of respondents); Hispanic-Serving Institutions (HSI), where 25% or more of full-time undergraduates identify as Hispanic (50% of respondents); and Other Campus Type, a combination of Asian American and Native American Pacific Islander-Serving Institutions (AANAPISI) and the institutions with a student demographic makeup that did not meet the definition of minority-serving institution classifications (31% of respondents) (National Academies of Sciences, Engineering, and Medicine, 2019).

Campus Region. The pandemic spiked differentially by geographic regions (Nicola et al, 2020). This often led to varied responses by campuses and governmental entities for in-person instruction and disease monitoring (US Department of Education, Office for Civil Rights, 2021). Therefore, to describe how the COVID-19 pandemic impact may have differed for respondents in different areas of the country, study sites were categorized based on Region in the United States: East Coast (20% of respondents), Middle United States (25%), and West Coast (56%).

COVID-19 Pandemic Effects on Participants

Overall, 20% of respondents reporting having an opportunity to conduct research in the past 12 months and answered item 1 (Table 1). Of these, 29% decided to change their research topic somewhat and 8% decided to change their topic very much because of the pandemic. There were no significant differences by gender or race/ethnicity (Table 2). Among subgroups, those involved with BUILD, those in biomedical majors, those from Hispanic-Serving Institutions (HSI) and Other campus types, and those from East or West Coast regions of the United States were much more likely to decide to change their research interests or topics because of the pandemic (Table 2).

Overall, 70% of the survey respondents rated the item about changes in access to mentors (item 2), leaving 30% that indicated they could not rate the item (Table 3). Of the 5,546 who completed the item, 27% reported that access to mentors decreased a little since the start of the pandemic and 31% reported access decreased a lot. There were no significant differences by BUILD involvement,

major, or campus type (Table 4). Those who identify as a Woman or with an Other Gender Identity were more likely to report a decrease in access to mentors. Those who identify as Black or African American were more likely to report an increase in access to mentors compared to those who identify with other Race/Ethnicity categories while those who identify as Hispanic, Latino/a, or Spanish, and those who identify as White were more likely to report a decrease in access to mentors. Respondents from campuses on the West Coast were more likely to report a decrease in access to mentors since the start of the COVID-19 pandemic.

Overall, 60% of the respondents rated the item about changes in research opportunities (item 3, Table 5). Of those, 21% reported that opportunities to conduct research decreased a little since the start of the pandemic and 46% reported opportunities decreased a lot. Respondents who identify as a Woman or with an Other Gender Identity, those who identify as Black or African American, those who are involved with BUILD, and those who are from campuses located in the middle of the United States were significantly more likely to report a decrease in opportunities to conduct research (Table 6). Respondents with biomedical majors were more likely than non-biomedical majors to report changes in opportunities to conduct research. Those in the biomed – natural sciences were more likely to report a decrease in opportunities to conduct research while those in biomed – social behavioral science majors were more likely to report an increase in opportunities. Respondents from HBCU campuses were much more likely than those from other campus types to report changes in opportunities to conduct research (both increases and decreases).

Table 1: Extent to which respondents decided to change research interests or topics because of the COVID-19 pandemic (%)

n	Not at All	Somewhat	Very Much	Not Applicable or Chose Not to Answer
1,619	52	29	8	11

Note. Only respondents who reported an opportunity to participate in research in the past 12 months (n=1,619) were presented with this question.

Table 2: Percent of respondents who decided to change research interests or topics because of the COVID-19 pandemic by demographic and campus characteristics

	n	Not at All	Somewhat	Very Much	Not Applicable or Chose Not to Answer
Gender Identity					
Man	464	57	26	7	10
Woman	1,095	51	30	8	11
Other	60	47	32	8	13
Race / Ethnic Identity					
Asian	288	47	31	7	15
Black or African American	343	56	38	6	10
Hispanic, Latino/a, or Spanish Origin	359	52	29	8	11
Other	333	50	29	9	11
White	296	56	27	9	8
BUILD Program Involvement*					
No	1,173	52	28	7	13
Yes ^a	446	54	34	9	6
Major*					
Biomed - Natural Science ^b	816	55	29	7	9
Biomed - Social Behavioral Science ^b	204	50	31	10	9
Non-Biomed	269	49	26	9	16
Campus Type*					
HBCU	238	58	28	3	11
HSI ^c	726	50	30	8	12
Other ^c	655	53	28	9	10
Campus Region*					
East Coast ^d	351	56	29	7	8
Middle United States	497	55	27	5	12
West Coast ^d	771	49	30	10	12

* p-value < 0.05 for sub-group differences by Chi-square among respondents who reported doing research in the past 12 months. Superscript letters indicate which sub-groups differ. Note that gender identity and major are missing for some respondents.

Table 3: Overall percent of respondents who experienced changes in access to mentors since the start of the COVID-19 pandemic

n	Decreased a lot	Decreased a little	Did not change	Increased a little	Increased a lot	Can't Rate
7,886	22	19	24	4	2	30

Table 4: Percent of respondents who experienced changes in access to mentors since the start of the COVID-19 pandemic by demographic and campus characteristics

	n	Decreased a lot	Decreased a little	Did not change	Increased a little	Increased a lot
Gender Identity*						
Man	1,689	30	25	38	5	2
Woman ^a	3,635	30	28	33	6	2
Other ^a	221	41	20	29	6	3
Race / Ethnic Identity*						
Asian	1,126	26	26	41	6	2
Black or African American	937	28	28	34	7	3
Hispanic, Latino/a, or Spanish Origin	1,382	33	28	31	5	3
Other	1,001	34	25	33	7	2
White ^b	1,100	32	28	34	5	2
BUILD Program Involvement						
No	4,825	31	26	35	6	2
Yes	721	27	30	34	7	3
Major						
Biomed - Natural Science	2,241	28	27	35	7	2
Biomed - Social Behavioral Science	467	31	29	31	7	3
Non-Biomed	1,457	30	27	36	5	3
Campus Type						
HBCU	675	29	27	35	6	3
HSI	2,698	31	26	34	6	3
Other	2,173	30	27	36	6	2
Campus Region*						
East Coast	1,128	28	25	38	6	2
Middle United States	1,402	28	29	35	7	2
West Coast ^c	3,016	33	26	33	6	2

* p-value < 0.05 for sub-group differences by Chi-square. “Can’t Rate” responses not included (n=2,340). Superscript letters indicate which sub-groups differ. Note that major is missing for some respondents.

Table 5: Overall percent of respondents who experienced changes in opportunities to conduct research since the start of the COVID-19 pandemic

n	Decreased a lot	Decreased a little	Did not change	Increased a little	Increased a lot	Can't Rate
7,886	27	12	17	2	1	40

Table 6: Percent of respondents who experienced changes in opportunities to conduct research since the start of the pandemic by demographic and campus characteristics

	n	Decreased a lot	Decreased a little	Did not change	Increased a little	Increased a lot
Gender Identity*						
Man	1,494	41	18	36	3	3
Woman ^a	3,052	47	22	25	4	2
Other ^a	172	58	19	20	2	2
Race / Ethnic Identity*						
Asian	975	38	22	35	3	2
Black or African American ^b	853	46	23	23	7	2
Hispanic, Latino/a, or Spanish Origin	1,130	47	20	26	4	3
Other	867	47	20	27	4	2
White ^b	894	49	18	30	2	2
BUILD Program Involvement						
No	4,010	44	20	30	4	2
Yes ^c	709	54	23	18	3	3
Major						
Biomed - Natural Science ^d	2,091	48	23	23	4	2
Biomed - Social Behavioral Science ^d	416	45	24	23	6	3
Non-Biomed	1,117	40	20	36	4	2
Campus Type*						
HBCU ^e	608	43	26	23	7	1
HSI	2,248	45	20	29	4	3
Other	1,863	47	19	29	3	2
Campus Region*						
East Coast	1,001	46	20	30	5	2
Middle United States ^f	1,259	46	23	24	5	2
West Coast ^e	2,459	46	19	29	3	2

* p-value < 0.05 for sub-group differences by Chi-square. “Can’t Rate” responses not included (n=3,167) Superscript letters indicate which sub-groups differ. Note that major is missing for some respondents.

Conclusion

This brief analysis shows that the COVID-19 pandemic adversely affected respondents' ability to conduct research (STU-11). Almost 40% of respondents who reported conducting research in the past 12 months decided to change their research interests or topics because of the COVID-19 pandemic. Almost 40% of respondents also reported a significant decrease in opportunities to conduct research since the start of the pandemic in March 2020. Respondents who identify as a Woman, with an Other Gender Identity, those who identify as Black or African American, and those from campuses in the Middle-United States were much more likely to report a decrease in opportunities to conduct research. Social behavioral science majors were more likely to change their research topic and were more likely to report increased research opportunities compared to natural science majors.

The analysis showed that the pandemic has also impacted respondents' access to mentors (STU-10) with over half of respondents experiencing a significant decrease in access to mentors since the start of the pandemic. Some subgroups – those who identify as a Woman, with an Other Gender Identity, as Hispanic, Latino/a, or Spanish, as White, and those from West Coast campuses - were much more likely to report a decrease in access to mentors compared to Men, Black or African American respondents, and respondents affiliated with BUILD institutions located in the East and Middle United States, respectively.

While these data represent a snapshot of the impact of the COVID-19 pandemic on research experiences and access to mentors among SAFS 2021 respondents, it suggests more research is needed to understand the differences in the long-term effects of the COVID-19 pandemic on the career trajectories and mentoring activities of EDS participants. Future studies can examine how experiences during the COVID-19 pandemic alter the trajectory of the following student-centered DPC hallmarks: Intent to pursue a career in biomedical research (STU-7); Persistence in biomedical degree or other formal research training program (STU-9); Frequent receipt of mentoring to enhance success in the biomedical pathway (STU-10); and Participation in mentored or supervised biomedical research (STU-11).

About BUILD

Building Infrastructure Leading to Diversity (BUILD) consists of a set of 10 linked awards granted to primarily undergraduate institutions, each of which developed approaches intended to determine the most effective ways to engage and retain students from diverse backgrounds in biomedical research, and to prepare students to become future contributors to the NIH-funded research enterprise.

BUILD is one of three core initiatives within the Diversity Program Consortium. Further information can be found here: <https://www.diversityprogramconsortium.org/pages/nih>

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