

The Effects of Family Income Inequality and Race and Ethnicity on Student's Attainment of Postsecondary Education in the U.S. During COVID-19

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Abstract: COVID-19 has taken a toll on the global economy. Researchers in the educational section have focused on the relationship between family income and children's attainment of postsecondary education and the influence of race and ethnicity on family income and education in the context of COVID-19. This study tries to prove the associations among attainment of postsecondary education, family income, and race and ethnicity with quantitative data gathered from the US Census Bureau. This study finally proposes the possibility that there are some hidden factors, other than race and ethnicity, that affect family income and proves some of the existing associations such as the relationship between family income and attainment of postsecondary education. This study constructs a platform for future scholars to combine and discuss the essential and correlated attainment of postsecondary education, family income, and race and ethnicity as a whole.

Keywords: Family income, race, ethnicity, attainment of postsecondary education, COVID-19.

1. Introduction

Since the COVID-19 pandemic in 2019, the global economy has been severely affected. Numerous industries underwent a hard time maintaining positive revenue, and rising unemployment has caused many households to lose an important source of income. Millions of people lose their jobs and therefore have no income to support their daily expenses anymore. Many students who want to receive postsecondary education are also affected, because their parents, who usually would financially assist their children to go to college, do not have more disposable wealth in the context of recession. More specifically, students and their families from different racial backgrounds endure various degrees of pressure in terms of maintaining a stable income and acquiring postsecondary education. Black, Asian, Latinx, and other racial minority families usually are discriminated against when they are looking for working opportunities and would be more likely to be replaced, compared to White people. Besides, Black, Asian, Latinx, and other racial minority students do not have equal access to postsecondary education, not only because of the influence of rooted discrimination on racial minorities in the U.S. itself, but also the income inequality, as one of the consequences of racial discrimination.

In the context of COVID-19, there is a relatively obvious and predictable pattern of how race, educational inequality, and income inequality are associated. The pandemic provides a unique and special platform for discussing the alteration and consistency of the relationship between race, education, and income inequality since it has contributed to a more competitive and tense environment where the societal problems, such as the great wealth gap, become more obvious and people could be aware of these problems. Because previous research has not explained the influence of race and income inequality on students' access to acquiring postsecondary education under the topic of COVID-19, this research collects statistical data and evidence to illustrate and explain this question and compare the current situation with the past.

2. Literature Review

The cost of children receiving postsecondary education is constantly increasing [1-5]. The growth in tuition fees and other daily expenses on necessities such as food and rent prevent many children from receiving postsecondary education, because many children and their families do not have enough savings and income, especially during the COVID-19 [1,4,6,7]. Many scholars have researched proving the association between children's access to postsecondary education and family wealth or income inequality by explaining the influence of these factors, other than the expensive cost of attending university. Fabian T. Pfeffer argues that family wealth is important in relieving the financial burdens caused by credit constraints for college students, especially as university tuition has risen dramatically in recent decades, and the financial situation of students in college will strongly affect students' persistence in staying in college and getting a degree [2,4,8]. Pfeffer proves that the wealth gap between college students who were born in the 1970s and 1980s has grown, partially because of the unequal wealth background of the college students, by conducting an empirical study of the effects of trend in family wealth inequality on educational inequality. He discovers that there is an increase in the wealth inequality in college education recently since the graduation rate of students who have wealthier family backgrounds is rising, compared to the graduation rate of students who come from lower wealth levels [8].

Other scholars such as Emily Rauscher, Todd Balf, Mitchell L. Stevens, and Thomas M. Shapiro similarly focus on the effects of family assistance on children's access to college education, but these scholars focus on the results of family income and parental transfers, which is a relatively common approach for parents assisting their children [2,9-11]. In the United States, almost 34 percent of young college students usually receive parental assistance during their education, and this usually happens in wealthier families [10]. Wealth gaps in education may indicate the different financial support to students for postsecondary education and parents' other decisions [11]. Some wealthier parents may be able to provide students with tutors to prepare for college application and standardized tests such as SAT, while other parents who have lower incomes may be able to merely provide parts of high school tuition and daily expenditures. In contrast to students coming from less affluent families, students with higher socioeconomic status have their advantages, such as higher SAT scores, to be accepted by prestigious and selective schools and receive better postsecondary education [9,12]. Because of the rising inequality in family income and significant expenditures such as tuition for college education, the inequality in students' ability to graduate is enlarging [1,2,7].

Some recent research explains the association between the discrimination against Black and Latinx people's working opportunities and salary and children's access to receive postsecondary education. During the Covid-19, Black and Latinx workers usually have less stable occupations compared to White people [3,13,14]. Because their parent's unemployment sometimes leads to more accompany for

education, Black and Latinx students may pay much more attention to study, compared to White students, but still, study shows that their academic performance is not comparable with White students [3]. The reason for the situation is that White students usually receive more financial support from their families, so more White students could receive better pre-postsecondary education and have more opportunities to strengthen academic performances or develop personal interests which are beneficial when it comes to applying to universities or colleges [15,16].

Although Pfeffer has innovatively used family wealth as an indicator to conduct empirical research on the correlation between wealth inequality and educational inequality, Pfeffer overlooks the effects of race and ethnicity on wealth inequality and educational inequality and the data he used is outdated. Sometimes race and ethnicity are the driving factors of the increase in the wealth gap and educational inequality, instead of merely family wealth. The discrimination against students and families of minorities would also affect students' attainment of postsecondary education since minorities sometimes are not equal to White students when applying to universities or colleges [2,4]. Moreover, numerous scholars such as Rauscher, Francis, and Weller usually use family income as an indicator, instead of family wealth, to assess a family's ability to assist their children in receiving postsecondary education. And this is also the innovative part of Pfeffer's study. Because family income does not include the wealth generated from items such as heritage, the ability to assist children to universities of people who live relying on these items would be underestimated [5].

Furthermore, Francis and Weller ignored the wealth gap among Asians who face similar situations as Black and Latinx workers. Racial discrimination, whether it is relatively explicit or inexplicit, against minorities in the U.S. has affected the income of these minorities and also their wealth, and suffered from poverty [17]. For example, there is an obvious division in the household wealth between wealthy Asian Americans and poor Asian Americans [18,19]. Francis and Weller also do not consider the possibility that because of the lack of income and occupation, students are more likely, like their parents, to seek part-time jobs to afford the expenditure for postsecondary education. Francis and Weller think Asian students are different from Black and Latinx students because their parents are more likely to maintain their jobs and provide consistent assistance to children. However, Francis and Weller do not consider the significant wealth gap among Asian students in the U.S. They mostly reflect the greatest wealth inequality in the U.S., so avoiding discussing Asian students from the poor family background will blur the possible racial discrimination against Asian people, even though it is true that Asians have the highest median family income in the U.S. Therefore, this study will try to analyze the effects of family income inequality and race on student's access towards postsecondary education and the relationship between family income and race and ethnicity during the COVID-19.

3. Methodology

This study examines the attainment of bachelor's degrees of people, including White, Non-Hispanic White, Black, and Asian, who are 18 years old and over from 2015 to 2021 in the United States by collecting statistical data, constructing graphs, and comparing different columns, in order to discover the association between race and education attainment and test whether the COVID-19 has an impact on these two factors. This study also gathers data about the median household income in the United States of people of various races and ethnic backgrounds from 2014 to 2020. Then, this study describes the changes in median household income and its association with race and ethnicity to build connections between education attainment and family income. Since race and ethnicity are not easy to be transformed into quantitative data and combined with educational attainment and family wealth to construct

regression lines, this study utilizes the arguments and reasonings of previous research and reasonings to analyze these associations.

This study collects data from a series of Educational Attainment in the United States from 2015 to 2012 and Poverty in the United States: 2020, which are conducted by the US Census Bureau. The US Census Bureau provides the most updated data about family income and students' attainment of postsecondary education in the U.S. in July 2022, and other reliable sources do not have the most updated and relevant data. For example, the Panel Study of Income Dynamics (PSID) could only provide data collected from surveys conducted in late 2019, which is only the start of COVID-19, and is unable to reflect the developing situation later in 2020 and 2021, even though the PSID is the most relevant source connects to education attainment and family income and wealth.

This study mainly talks about the numbers of people that attain bachelor's degrees, median family income, and race and ethnicity. This study chooses the attainment of a bachelor's degree because it can reflect the number of people who finish the whole process of postsecondary education. Compared to enrollment rates, the attainment rate avoids some variabilities caused by drop-out students [5]. Besides, this study collects family income for two reasons. First, there is no available and up-to-date data about family wealth, so examining the income is a better choice. Since students are usually supported by their parents in the U.S. [2,9-11], family income is better than the personal income of parents or children. Second, because of the great wealth gap in the U.S. the mean family income that should represent the average living standard and ability to purchase commodities and provide children with financial assistance, are strongly affected by the significantly high mean family income of children from the top 1% [1,4,5,7,8].

4. Finding

The central question addressed here is what the associations among the three factors, the numbers of people that attain bachelor's degrees, median family income, and race and ethnicity, look like and how these factors are influenced by COVID-19. Table 1 shows the numbers of attainment of bachelor's degrees. The whole amount of attainment of bachelor's degrees has increased by about 10,000 thousand people in 6 years from 46,515 thousand people in 2015 to 56,258 thousand people in 2021. White people consist of the largest proportion in the attainment of bachelor's degree, which is about 80 percent of the whole population in 2015 and about 79 percent of the whole population in 2021. This indicates that there is almost no increase in the proportion of attainment of bachelor's degrees of other minorities including Black, Asian, and Hispanic people (refer to Figure 1). Compared to the population of White bachelor's degree holders, Black, Asian, and Hispanic degree holders have similar proportions. However, the increase in Black degree holders is only around 200 thousand people, which is smaller than the increase of Asians and Hispanics.

Table 1 shows the numbers of additional attainment of bachelor's degrees in thousands. The additional attainment of White people is greater than other minorities, partially due to the existing huge population base of White people. Besides, before 2021, there is usually an increase in the additional attainment of all the people, even though there are some cases where there is no increase in the additional attainment in some groups of people. During the transition from 2020 to 2021, there is an obvious decrease in the additional attainment of people with different racial backgrounds (refer to figure 2).

Table 1: Attainment of Bachelor's degree (18 years and over)(numbers in thousands) 2015-2021.

	2015	2016	2017	2018	2019	2020	2021
All Race	46,515	47,718	49,368	51,406	53,312	55,791	56,258
White Alone	37,289	38,195	39,672	40,818	42,131	43,760	44,351
Non-Hispanic White Alone	34,072	34,812	35,792	36,568	37,806	38,951	39,434
Black Alone	3,901	4,074	4,301	4,731	4,895	5,344	5,177
Asian Alone	4,313	4,401	4,297	4,673	5,066	5,276	5,219
Hispanic (of any race)	3,611	3,845	4,330	4,765	4,900	5,514	5,635

Table 2: Additional Attainment of bachelor's degree (18 number and over) (number in thousands) (2016-2021).

	2016	2017	2018	2019	2020	2021
All Race	1,203	1,650	2,038	1,906	2,479	467
White Alone	906	1,477	1,146	1,313	1,629	591
Non-Hispanic White Alone	740	980	776	1,238	1,145	483
Black Alone	173	227	430	164	449	-167
Asian Alone	88	-104	376	393	210	-57
Hispanic (of any race)	234	485	435	135	614	121

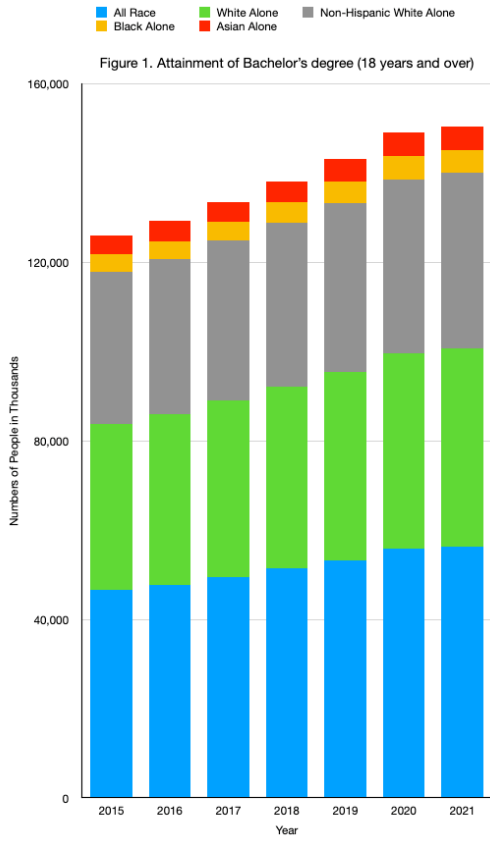


Figure 1. Attainment of Bachelor's degree (18 years and over)

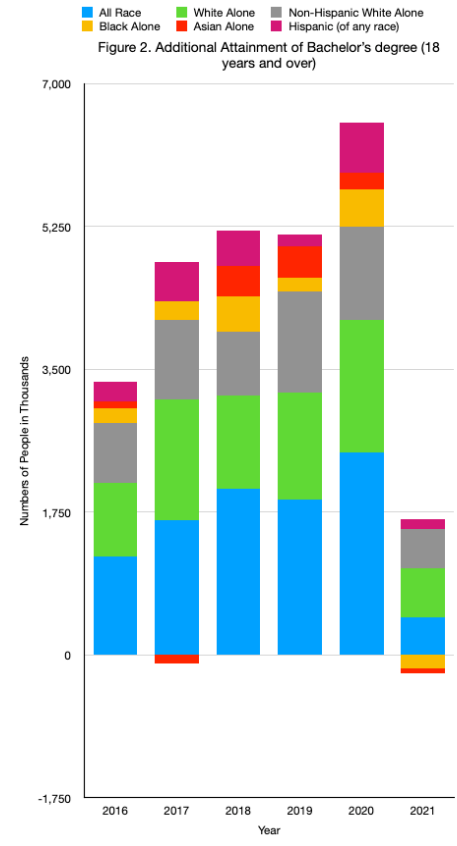


Figure 2. Additional Attainment of Bachelor's degree (18 years and over)

Figure 1: Attainment of Bachelor's Degree (18 years and over) (2015-2021).

Figure 2: Additional Attainment of Bachelor's degree (18 years and over) (2016-2021).

According to Table 3 and Figure 3, the average growth rate of attainment of a bachelor's degree for all people is around 4 percent. White people's attainment growth rate is very close to the average value. The growth rates of the attainment of Black and Hispanic people are always above 4 percent and only below 4 percent in 2021, the same as other people. The pattern of the growth rate of the attainment of Asian people is almost opposite to the patterns of Black and Hispanic people's growth rate before COVID-19. Still, the growth rate of Asian people's attainment rate decreases in 2021. The first three tables and figures reveal the association between numbers of attainment and race and indicate that there is an effect of COVID-19 on the student's attainment of postsecondary education.

Table 3: Growth Rate of Attainment of Bachelor’s Degree (18 years and over) (2016-2021).

	2016	2017	2018	2019	2020	2021
All Race	2.586%	3.458%	4.128%	3.708%	4.650%	0.837%
White Alone	2.430%	3.867%	2.889%	3.217%	3.867%	1.351%
Non-Hispanic White Alone	2.172%	2.815%	2.168%	3.385%	3.029%	1.240%
Black Alone	4.435%	5.572%	9.998%	3.466%	9.173%	-3.125%
Asian Alone	2.040%	-2.363%	8.750%	8.410%	4.145%	-1.080%
Hispanic (of any race)	6.480%	12.614%	10.046%	2.833%	12.531%	2.194%

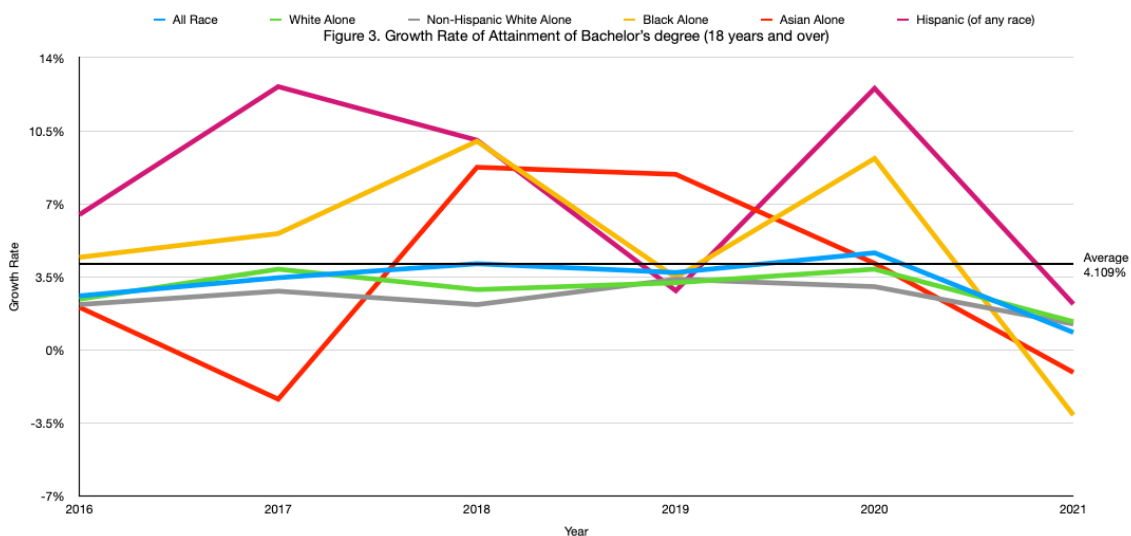


Figure 3: Growth Rate of Attainment of Bachelor’s Degree (18 years and over) (2016-2021).

This study uses median household income in the United States to assess the relationship between race and ethnicity and family income under the context of COVID-19. Table 4 and Figure 4 reveal that the median household income of White people is always slightly larger than the median household income of all the people in the U.S. The median household income of Asians is the greatest among different races, which grows from 81,315 dollars in 2014 to 94,903 dollars in 2020. The median household income of Black people is the lowest, which increases from 38,742 dollars in 2014 to 45,870 dollars in 2020. The median household income of Hispanics is between Black people and White people. Besides, there is a slight decrease in the median household income of people with different racial backgrounds, which is about 2,002 dollars.

Table 4: Median Household income in the US (Dollar) (2014-2020).

	2014	2015	2016	2017	2018	2019	2020
All Race	55,613	58,476	60,309	62,626	64,324	69,560	67,521
White Alone	65,674	66,724	68,925	68,461	69,007	73,105	71,231
Non-Hispanic White Alone	65,948	68,778	70,157	71,958	72,820	77,007	74,912
Black Alone	38,742	40,314	42,596	42,511	42,636	46,005	45,870
Asian Alone	81,315	84,310	87,837	85,882	89,882	99,400	94,903
Hispanic (of any race)	49,328	51,425	53,311	52,974	53,036	56,814	55,321

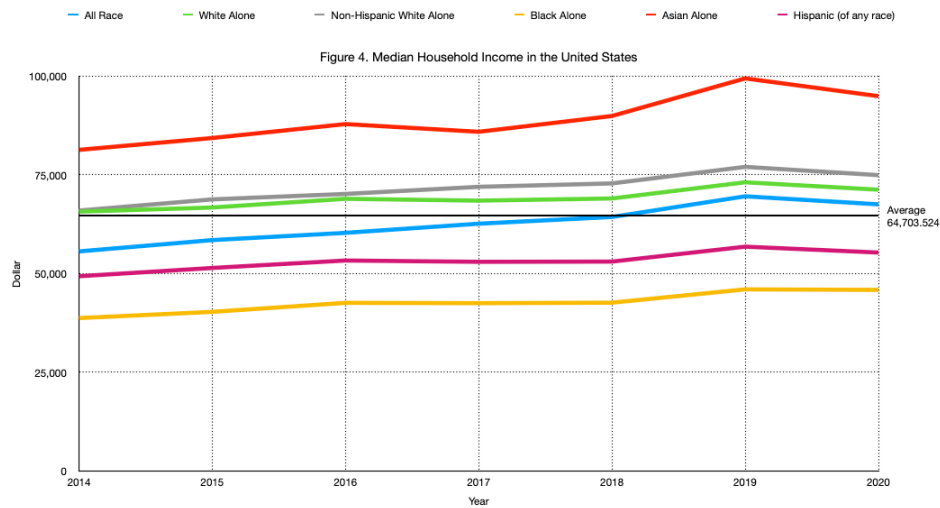


Figure 4: Median Household Income in the USA (2014-2020_).

According to Table 5 and Figure 5, the growth rate of median household income in the United States for people with different racial backgrounds is mostly positive from 2017 to 2019. And the growth rates are increasing until 2020 when they all drop below 0%, which means that the median household income is halted and even diminished.

Table 5: Growth Rate of Median Household Income in the USA (2016-2020).

	2016	2017	2018	2019	2020
All Race	3.135%	3.842%	2.711%	8.140%	-2.931%
White Alone	3.299%	-0.673%	0.798%	5.939%	-2.563%
Non-Hispanic White Alone	2.005%	2.567%	1.198%	5.750%	-2.721%
Black Alone	5.661%	-0.200%	0.294%	7.902%	-0.293%
Asian Alone	4.183%	-2.226%	4.658%	10.589%	-4.524%
Hispanic (of any race)	3.667%	-0.632%	0.117%	7.123%	-2.628%

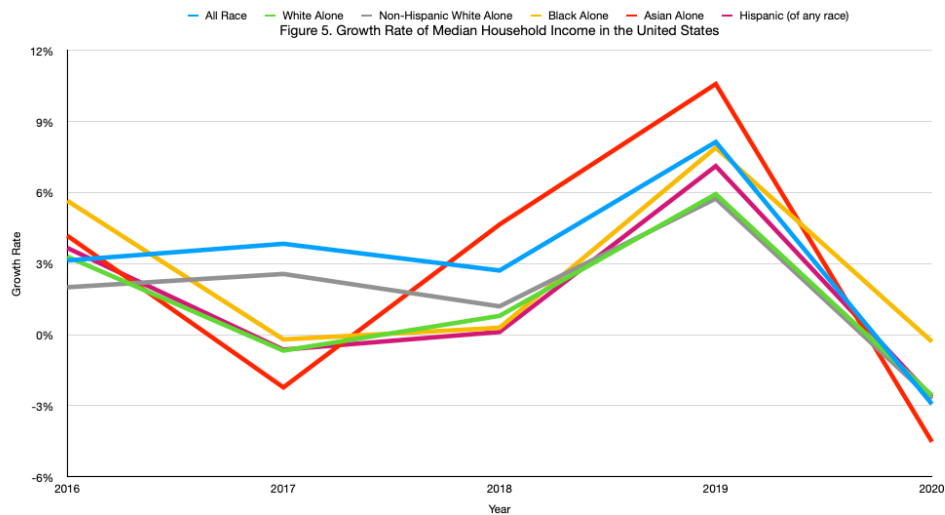


Figure 5: Growth Rate of Median household Income in the USA (2016- 2020).

5. Discussion

This study reveals certain associations between the attainment of postsecondary education, race and ethnicity, and family income in the context of COVID-19. About the relationship between the attainment of postsecondary education and race and ethnicity, the proportion of each group of people in terms of race and ethnicity is relatively stable. But the fluctuating growth rates of Asian, Black, and Hispanic people's attainment suggest that the attainment of minorities, compared to White people, are more easily influenced, which also means that from 2015 to 2021 there are some significant events or changes that strongly influence the attainment of bachelor's degree of students of the minority. This stable proportion and relatively unstable growth rates imply that there is probably some association between race and ethnicity and children's access to bachelor's degrees [3]. For instance, White people are less likely to be affected by societal events compared to minorities. Nevertheless, it is still possible that this stable proportion and relatively unstable growth rates are the results of the huge population base of White people.

In addition, COVID-19 indeed reduces the attainment of bachelor's degrees and its growth rate greatly, partially due to the effects of COVID-19 on people's wealth [20,21].

According to Table 4&5 and Figure 4&5, there is a relationship between family income and race and ethnicity. Because the patterns of lines in Figure 4 and 5, respectively, are relatively similar and there are clear distinctions between the income of people of different races, it is possible to argue that there is a relationship between family income and race and ethnicity [3]. However, the significant change in the growth rates of different groups of people poses a question. During COVID-19, the growth rate of Asian people's household income has decreased more than every other group of people has. Surprisingly, the growth rate of Black people's household income experiences the lowest change. If COVID-19 has an impact on income, the most common hypothesis should be the Black people experiencing the most significant influence because of the racial discrimination in their jobs and the fact that more Black people are undereducated [21]. However, previous researchers seem to overlook hidden factors. It seems that COVID-19 triggers some factors other than income and race or ethnicity so there could be an explanation for the change.

By comparing Figure 3 and Figure 5, this study finds that there is a strong association between household income and attainment of postsecondary education, mainly for minorities. In terms of those minorities, the pattern of attainment from 2017 to 2021 is similar to the pattern of income from 2016 to 2020. This hysteresis phenomenon could give sufficient evidence to the argument that there is a relationship between family income and the attainment of post-secondary education [2,8]. People's income will affect children's attainment of education because people could provide a better studying environment for children and help them be prepared for applying to universities or colleges [2,4]. Moreover, because the pattern of income and the pattern of attainment of White people are not similar, the significance of the income on attainment is not great. In other words, the attainment of White children is not strongly affected by the household of White people.

6. Conclusion

This study is trying to prove the relationships among attainment of postsecondary education, family income, and race and ethnicity proposed by previous researchers in the context of COVID-19 in the United States. This study collects statistical data and forms tables and graphs, and then this study proves that there are some associations between the attainment of postsecondary education, family income, and race and ethnicity. Instead of merely testing the previous hypotheses of other scholars, this study finds that there are some hidden factors other than race and ethnicity, that influence family income. Besides, this study also discovers that there is a hysteresis phenomenon, which is about the effects of family income on children's attainment of postsecondary education, and the influence of family income on White people's attainment is low. Overall, the findings of this study reflect and discloses the complexity of the relationships between the attainment of postsecondary education, family income, race and ethnicity, and some hidden factors that many scholars have not focused on before. There are still many limitations in this study. Since this study chooses household income instead of family wealth as the indicator of people's ability to financially assist children to receive post-secondary education, this study ignores a group of families and children who are relying on heritage and other types of family wealth. In addition, this study does not scrutinize the causes of the differences between people of various race and ethnicity and lack some empirical evidence to support my findings about the associations between the attainment of postsecondary education, family income, and race and ethnicity. Finally, future studies could focus on

finding the hidden factors this study has mentioned and conduct more empirical studies to test the associations among attainment of postsecondary education, family income, and race and ethnicity.

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