In this paper, I use repeated measures data of the same individuals from the Scientists and Engineers Statistical Data System (SESTAT) to examine whether age at arrival affects earning among highly skilled immigrants. A generalized estimating equations (GEE) model is used to conduct the data analysis.

In the literature, the earnings assimilation of immigrants has been largely debated. Chiswick (1978) studied this issue using cross-sectional data from the 1970 Census and found that the earnings of foreign-born persons immediately upon arrival were lower than those of comparable native-born people. Over time, however, as immigrants have lower earnings, they have greater incentives to invest in human capital development. Immigrant earnings can be expected to rise relatively fast as the returns to human capital investments are realized.

Among the empirical studies of highly skilled immigrant labor market performance, a great number of research have focused on Asian immigrants, probably because they comprise the largest group of immigrants in the current U.S. highly skilled labor market. Scholars have found that among the members of this group, scientists and engineers are at an earnings disadvantage compared to their native-born counterparts. Other studies, however, have found that foreign-born scientists and engineers do not experience an earnings disadvantage. Espenshade et al. (2001) found that in the United States, foreign-born scientists and engineers earn more per year on average than do their native-born counterparts. Among the former, Asian-, Latin American-, and Caribbean-born scientists and engineers are not at an earnings disadvantage, and those from Europe or Canada earn more than their native-born peers. To investigate this, many new variables have been examined. For example, number of years of migration, place of education, and language spoken in original countries etc has been examined. However, an important variable which

could reflect overall acculturation have been largely overlooked in previous research. Children learn English more easily than adults as the ability to learn new language declines with age. Immigrants who arrive at a relatively older age are thus less likely to master English language skills than those who arrive at a younger age. Speaking English well is important to full participation and the achievement of success in American society, which means that those who immigrated as children, teenagers or at college time will tend to be more embedded in the U.S. economy and society. Immigrants who come at a younger age could also acquire more skills that are specific to the United States earlier, including knowledge of the labor market, than that of their older counterparts. For example, they are more likely to fully participate in all kinds of social activities with their native-born peers. In addition, they may have more connections in the United States as they have had more time to build up social and political capital, including become a permanent resident or naturalized citizen (Rumbaut 1997; Alarcon 1999). Thus, attending college or earlier education in American institutions may improve, to a large degree, acculturation in terms of personal communication, language, and culture as well as the accumulation of social and political capital.

This paper divided immigrant scientists/engineers into four different groups: arrival in U.S. younger than 18 years old, arrival between ages 18 to 22, arrival between ages 23 to 28 and arrival at ages older than 28. The statistical result shows that all age groups have significantly better earning outcomes than those who came after the age of 28. However, when stratified by gender, this pattern only exists among male sample, showing different acculturation impact on labor market between men and women.

Table 1: Mean or Percentage of Variables in 1993 for Immigrants, SESTAT

Variable	Mean/Percent	Variable	Mean/Percent
Annulized salary	54650.31	*Majors of Education Degrees*	
Logged anaulized salary	10.80	Social & related Science	12.07
Age at Arrival		Computer & math Science	11.37
<18	28.30	Life & related Science	15.34
18-22	18.24	Physical & related Science	12.93
23-28	33.31	Engineering	36.94
>28	20.15	Non-S&E Degree	11.35
Place of Education		*Employment Status and Sectors*	
U.S. BA and highest degrees	42.64	Full-time job	99.82
U.S. BA, foreign highest degree	0.48	Academia	28.23
Foreign BA, U.S. highest degree	40.45	Government	10.54
Foreign BA and highest degree	16.42	Industry	61.23
Country of Origins		*Work Experience*	
Canada/Oceania/Europe, English Predominate	9.98	Years of professional work experience	13.69
Europe, Non-English Predominate	14.93	Out of employment in study periond	9.78
Asia, English Predominate	21.08	*Family Situation*	
Asia, Non-English Predominate	39.51	Having no children under age 12	59.75
Other countires	14.51	Having one child under age 12	20.61
Citizenship Status		Having 2 more children under age 12	15.96
Citizens, Naturalized	62.53	Married	78.07
Non-citizens, Permanent Residents	29.25	Divorced/seperated/widow	6.55
Non-citizens, Temporary Residents	8.22	Never marrid	15.38
Demographic characteristics		Married and spouse work	51.75
Female	24.33		
Age	41.88		
Education Degrees			
Bachelor	28.08		
Master	22.64		
Doctorate	46.40		
Professional	2.84		
Other Degree	0.03	Number	12471

Table 2: Coefficients and Standard Errors of Immigrant Scientists/Engineers Logged Earnings Measured at Two-Year Intervals Overall and by Gender: Generalized Estimating Equations (GEE) Models

	Model1		Model2		Model3	
Variance Structure	All Immigrants		Male Immigrants		Female Immigrants	
	Coeff.	Std. Err	Coeff.	Std. Err	Coeff.	Std. Err
Intercept	8.523***	0.079	8.427***	0.09	8.726***	0.169
Arrival age >28	--- ---	---	--- ---	---	--- ---	---
Arrival age <18	0.054 *	0.025	0.07 *	0.028	-0.004	0.053
Arrival age 18-22	0.089***	0.017	0.101***	0.019	0.038	0.035
Arrival age 23-28	0.053***	0.013	0.062***	0.014	0.025	0.028
Foreign BA and highest(omitted)	--- ---	---	--- ---	---	--- ---	---
U.S. BA and highest	0.048 **	0.016	0.027	0.018	0.103 **	0.034
Foreign BA and U.S. highest	0.049***	0.014	0.033 *	0.016	0.094 **	0.03
Time	0.051***	0.005	0.054***	0.005	0.035***	0.01
Female	-0.101***	0.011				
Age	0.05***	0.003	0.054***	0.004	0.035***	0.007
Age Squared	-0.0006***	0.00001	-0.0007***	0.00001	-0.0005***	0.0001
Canada/Oceania/Europe, English Predominate(omitted)	--- ---	---	--- ---	---	--- ---	---
Europen, Non-English Predominate	-0.05***	0.015	-0.042 *	0.017	-0.07 *	0.03
Asia, English Predominate	-0.11***	0.014	-0.114***	0.017	-0.085 **	0.03
Asia, Non-English Predominate	-0.081***	0.014	-0.096***	0.016	-0.032	0.028
Other countires-born	-0.127***	0.015	-0.14***	0.017	-0.086 **	0.03
Citizens, Naturalized	--- ---	---	--- ---	---	--- ---	---
Non-citizens, Permanent Residents	-0.075***	0.017	-0.086***	0.008	-0.035	0.039
Non-citizens, Temporary Residents	-0.014	0.008	-0.019***	0.009	0.001	0.018
Years in U.S.	0.007***	0.0012	0.012***	0.0019	0.012 **	0.004
Squared years in U.S.	-0.0001***	0.00001	-0.0002***	0.00001	-0.0001	0.00001
Bachelor(omitted)	--- ---	---	--- ---	---	--- ---	---
Master	0.147***	0.011	0.148***	0.013	0.144***	0.023
Doctorate	0.392***	0.011	0.375***	0.013	0.441***	0.023
Professional	0.606***	0.024	0.616***	0.027	0.587***	0.047
Other Degrees	0.144***	0.035	0.174***	0.045	0.121 *	0.057
Social & related Science(omitted)	--- ---	---	--- ---	---	--- ---	---
Computer & math Science	0.153***	0.016	0.142***	0.02	0.173***	0.026
Life & related Science	0.034 *	0.014	0.057 **	0.018	-0.001	0.023
Physical & related Science	0.054***	0.015	0.063***	0.018	0.032	0.027
Engineering	0.133***	0.013	0.134***	0.016	0.155***	0.027
Non-S&E Degree	0.056***	0.016	0.058***	0.02	0.057 *	0.028
Full-time	0.671***	0.015	0.689***	0.019	0.648***	0.025
Industry(Omitted)	--- ---	---	--- ---	---	--- ---	---
Academia	-0.236***	0.008	-0.221***	0.009	-0.273***	0.016
Government	-0.128***	0.01	-0.121***	0.012	-0.142***	0.022
Professional work experience	0.02***	0.007	0.019***	0.008	0.021***	0.002
Experience of out of labor force	-0.106***	0.014	-0.105***	0.016	-0.101***	0.026
Having no children under age 12	--- ---	---	--- ---	---	--- ---	---
Having one child under age 12	-0.004	0.006	-0.004	0.007	-0.01	0.015
Having 2 more children under age 12	0.015 *	0.008	0.01	0.008	0.031	0.018
Never married (Omitted)	--- ---	---	--- ---	---	--- ---	---
Married	0.078 **	0.012	0.085***	0.014	0.059 *	0.029
Divorced/seperated/widow	0.034 *	0.015	0.037 *	0.018	0.025	0.027
Married and spouse work	-0.05***	0.006	-0.05***	0.007	-0.042	0.022
Time*female	-0.006	0.004				
Time*Foreign BA and highest(omitted)						
Time*U.S. BA and highest	0.006	0.005	0.003	0.006	0.018	0.012
Time*Foreign BA and U.S. highest	0.007	0.005	0.004	0.006	0.02	0.012
Number of Observations	35261		26989		9589	

*Two tail test: a. ***p<0.001 **P<0.01 *P<0.05*

b. Inflation is controlled based on 1993