

The Prevalence of Nascent Entrepreneurs in the United States: Evidence from the Panel Study of Entrepreneurial Dynamics

*Paul D. Reynolds
Nancy M. Carter
William B. Gartner
Patricia G. Greene*

ABSTRACT. The Panel Study of Entrepreneurial Dynamics (PSED) is a national longitudinal sample of 64,622 U.S. households that were contacted to find individuals who were actively engaged in starting new businesses. The PSED includes information on: the proportion and characteristics of the adult population involved in attempts to start new businesses, the kinds of activities nascent entrepreneurs undertake during the business startup process, and the proportion and characteristics of the start-up efforts that become infant firms. Prevalence rates for nascent entrepreneurs are reported by gender and ethnicity (whites, blacks and Hispanics) on such

demographic variables as: age, education, household income, and urban context.

1. Introduction

The Panel Study of Entrepreneurial Dynamics (PSED) is a research program that was initiated to provide systematic, reliable and generalizable data on important features of the entrepreneurial or start-up process. This includes information on the proportion and characteristics of the adult population involved in efforts to start firms, the activities that compose the start-up process, and the proportion and characteristics of the start-up efforts that become infant firms. Previous studies of the impact of new business creation have shown that this kind of entrepreneurial activity has a significant impact on economic growth, innovation and job creation (Reynolds et al., 2001; Reynolds et al., 2000). Indeed, studies of the sources of innovation in the U.S. economy have found that smaller firms (which are more likely to be newer firms) are more innovative than larger firms in most industries (Acs and Audretsch, 1988). Efficient and timely adaptation of the economic structure, reflecting innovations in products and procedures, seems to be facilitated by the creation of new businesses.

The impact of the formation and growth of new businesses has a substantial impact on the creation of employment in the United States. Since David Birch's 1979 study of the impact of new and small firms on creating new jobs, a considerable body of evidence has been generated which supports his conclusions that small firms are the major source of employment growth in the U.S. economy (Birch, 1979, 1987; Kirchoff, 1994; Reynolds and White, 1997). But more recent assessments

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*Paul D. Reynolds
Blank Center for Entrepreneurial Studies
Babson College
Babson Park, MA 02457-0310
U.S.A.
E-mail: reynoldspd@babson.edu*

*Nancy M. Carter
College of Business
University of St. Thomas
TMH 470 – 1000 LaSalle Ave.
Minneapolis, MN 55403-2005
U.S.A.
E-mail: nmccarter@stthomas.edu*

*William B. Gartner
Lloyd Grief Center for Entrepreneurial Studies
Bridge Hall One
Marshall School of Business
University of Southern California
Los Angeles, CA 90089-0801
U.S.A.
E-mail: wgartner@marshall.usc.edu*

*Patricia G. Greene
Nichols Hall
Babson College
Babson Park
MA 02457-0310
U.S.A.
E-mail: greene@babson.edu*



have indicated that the original focus was misplaced. New firms, not necessarily small firms, are the dominant source of net job growth; there is a net job loss among older firms, whether small or large (Acs, Armington and Robb, 1999). Entrepreneurial activity provides profound positive benefits across an important set of measures of social and economic well-being, much of it concentrated in new economic sectors such as information technology, when compared to service-producing or goods-producing industries (Boden, 2000).

Yet, even though entrepreneurship has been shown to provide many benefits, it is surprising that there has not been a systematic study of the entrepreneurial process. While entrepreneurs contribute so much to our society, we know little about them. While we can see the results of entrepreneurial activity in the form of new businesses and new innovations, we have limited information on how these new businesses actually came into existence. Although we can see the successes of entrepreneurial activity, we have few insights about why these particular entrepreneurial efforts were successful while other efforts failed. Indeed, we have almost no information on the number and characteristics of the nascent entrepreneurs who attempt to start businesses and the likelihood that such attempts will result in the formation of new businesses. The primary problem in attempting a study of individuals who are starting businesses is in finding these individuals while they are actually involved in business startup activities.

The Panel Study of Entrepreneurial Dynamics (PSED) is an investment of a considerable amount of time and effort into locating these nascent entrepreneurs while they are in the process of starting businesses. The PSED is an attempt to study entrepreneurs, in a generalizable way, and in real time, rather than after the fact. The PSED is therefore, the first attempt to develop a comprehensive, thorough, representative portrait of entrepreneurial activity in the United States as this phenomenon occurs.

2. The PSED model and research design

The PSED process built on earlier efforts by Paul Reynolds and colleagues to study nascent entrepreneurs in Wisconsin (Reynolds and White, 1993,

1997), as well as a small national sample of nascent entrepreneurs who were identified from a study that was "piggy-backed" on to the University of Michigan Institute for Social Research Survey of Consumer Attitudes (Curtin, 1982; Reynolds, 1997). These prior studies indicated that it was technically feasible, as well as financially feasible, to locate and survey individuals from the general population of all United States adults who were actively engaged in starting businesses.

A number of factors are likely to influence a person's decision to engage in entrepreneurial activity and subsequently persist in efforts to start a new business. As seen in Figure 1, the entrepreneurial process has three stages with two transition points.

The entrepreneurial process is continually influenced by political, social and economic factors and the research design accounts for the influence of these factors throughout the research process. As depicted on the left side of the model, the first stage of the start-up process involves the POPULATION of all individuals, some of whom might decide to start a business. These individuals come from two potential sources: all those involved in the labor force and those that are employees of existing businesses. The first transition point in the start-up process is CONCEPTION when individuals from these two sources elect to pursue a new business startup. If the startup effort is intended to be an independent startup, those involved are referred to as nascent independent entrepreneurs [NIE]. If the start-up effort is sponsored by an existing business, those involved are considered to be nascent corporate entrepreneurs [NCE]. We refer to both groups as nascent entrepreneurs [NE]. The primary questions we explore at CONCEPTION are two: *What is the tendency of individuals to begin these business start-up process? What is unique about the individuals or their situation that leads some to enter this transition?* There is a great deal of speculation that entrepreneurs are very different than other individuals in the general population. An important feature of the PSED involves the identification of a comparison group of adults in the general population who are not involved with start-up activities. Comparisons on characteristics of the sample of nascent entrepreneurs to those of the compar-

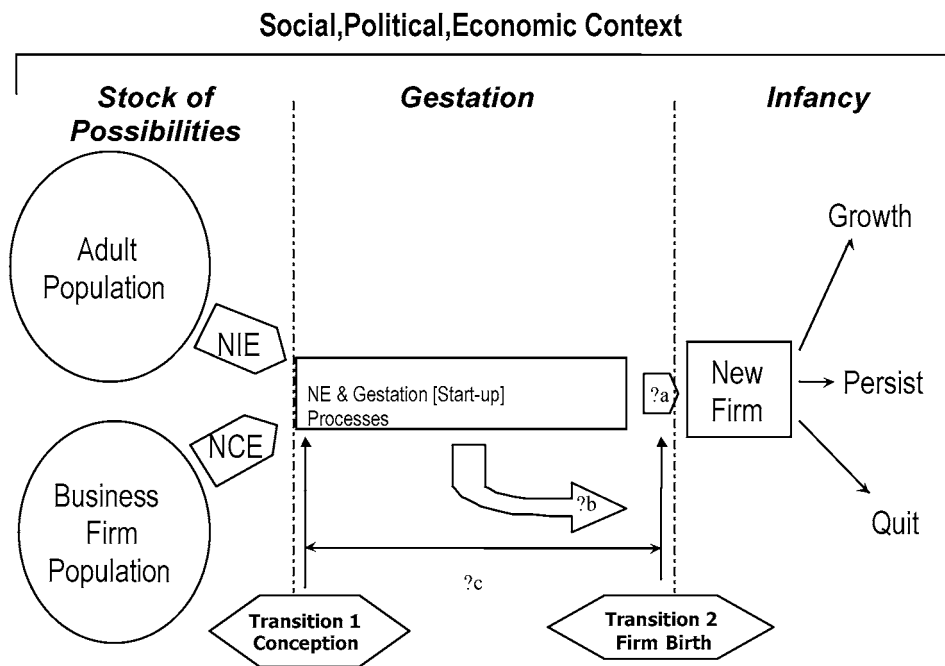


Figure 1. Conceptualization of the entrepreneurial process.

ison group allow results to generalize to the U.S. adult population.

What distinguishes the PSED from other studies of the entrepreneurial process is the detailed focus on the GESTATION stage. The GESTATION stage depicts many of the factors that affect the efforts of nascent entrepreneurs to bring their businesses into existence as well as the length of time involved in their startup efforts. Not only are the activities of these nascent entrepreneurs described, the PSED also explores such factors as the amount and types of resources invested during the startup process and the composition and characteristics of individuals involved in a particular startup.

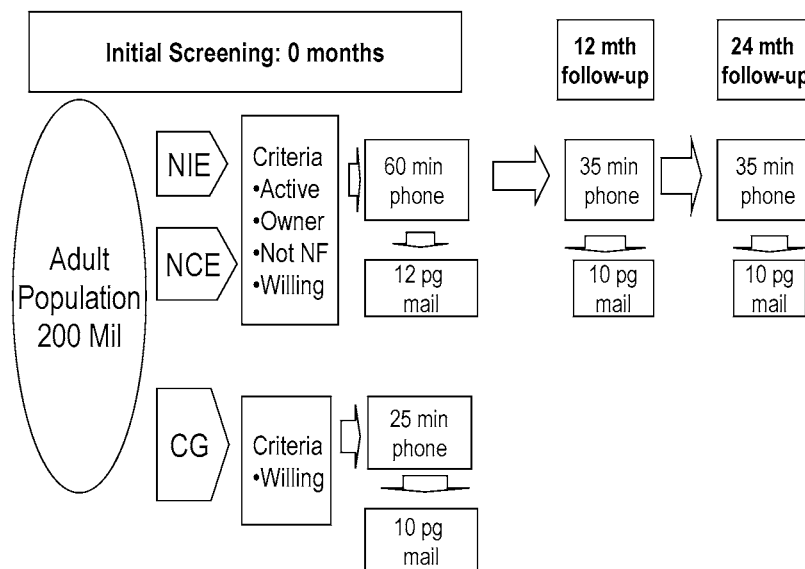
The primary question we explore at GESTATION is: *How do nascent entrepreneurs go about the process of starting firms?* An entrepreneur's startup activities can take the form of four possible pathways: (1) The nascent entrepreneur creates an infant firm. (2) The nascent entrepreneur can be "still trying" to start the business. (3) The nascent entrepreneur can put the startup effort "on hold" with expectations of continuing to pursue the startup process later. And, (4) the nascent entre-

preneur can "give up" and abandon the startup effort.

If the entrepreneurs' activities become an infant firm, the second transition point in the model indicates this transition point as BIRTH. The question we pursue at the transition point of BIRTH is: *Why are some of these business start-up efforts successful in creating new firms?*

If a firm birth does occur, then the new business is in its INFANCY stage. These new infant businesses struggle through a "liability of newness" in which the firm's very survival may be at risk. During this period, three types of trajectories are possible: growth; persistent but stable survival; or termination. Future studies of the PSED will explore the process of GESTATION, BIRTH, and INFANCY over time to determine how the nature of the individuals, their gestation strategies, and their context during gestation affects the future development of the new firms.

The research design, presented in Figure 2, has two basic features, (1) a procedure for identifying and interviewing nascent entrepreneurs and a comparison group and (2) the content of the interviews.



[NIE = Nascent Independent Entrepreneurs; NCE = Nascent Corporate Entrepreneurs; CG = Comparison Group]

Figure 2. Research design overview.

The first stage involves large-scale screening of households to create two samples representative of the national population of adults, those 18 years old and older. First, a sample of those involved in attempting to start a new business was identified, either nascent independent entrepreneurs [NIE] or nascent corporate entrepreneurs [NCE]. Second, a representative sample of typical adults not involved with a business start up was selected to be used as the comparison group [CG]. Once the screening procedures were completed, the second stage of data collection involved detailed phone interviews followed by completion of self-administered questionnaires mailed to the respondents. The third stage involved the follow-up interviews completed with nascent entrepreneurs 12 and 24 months after the first interview. This article includes information on findings generated from analyses of the large-scale screening of households, only.

3. The PSED sampling process

A total of 64,622 individuals were contacted by telephone using a random digit dialing process to locate households with listed and unlisted numbers. All screening interviews were completed

between July 1998 and January 2000. National screening of the adult population was completed by a commercial market research firm (TeleNation Program, Market Facts, Inc.; Arlington Heights, IL). The screening process identified three random samples of 1,000 adults each week in the contiguous 48 states. Random digit dial sampling procedures (the actual phone numbers are randomly generated) were used to locate households. The first individual 18 and older that would complete the phone interview was accepted as a respondent. Quota sampling was used to ensure that half of each sample were men and the other half women. Each sample was completed in a three-day period with a three-call criterion (initial call and two call-backs). However, up to 2% of the respondents were called from 4–9 times to complete an interview. The interviews were controlled to be less than 30 minutes long to minimize mid-interview terminations.

There were five such sub-samples generated from the telephone screening. The first subsample (labeled in Table I as ERC) has been identified as the “ERC sample” or the “mixed gender” sample in other studies. The “ERC” sample was funded by the Entrepreneurship Research Consortium, a group of universities, and foundations. The second

TABLE I
Reported involvement in start-up activity

Target of sample		Pool size	Reports autonomous start-up during market facts screening (SUINVOL)			
			NIE ^a	NCE ^b	Both ^c	Total
ERC	F	7,563	355	157	59	571
	M	7,555	586	260	136	982
NSF-W	F	8,099	367	147	52	566
	M	8,044	577	288	127	992
NSF-Min	F	14,632	657	280	128	1,065
	M	13,682	985	393	211	1,589
CG-ERC	F	1,007		Unknown. Not asked.		
	M	1,003		Unknown. Not asked.		
CG-Min	F	1,574	80	30	7	117
	M	1,463	109	35	29	173
Totals:		64,622	3,527 ^d	1,525 ^d	713 ^d	5,765 ^d

^a NCE = Nascent Entrepreneur. A “yes” response to: Are you, alone or with others, now trying to start a new business?

^b NCI = Nascent Corporate Entrepreneur. A “yes” response to: Are you, alone or with others, now starting a new business or new venture for your employer? An effort that is part of your job assignment?

^c Both. Answered “yes” to both of the NIE + NCE questions.

^d Totals for all classifications of nascent entrepreneurs do not include the respondents from either comparison group.

subsample (labeled as CG-ERC) was the “mixed gender” comparison group, also funded by the ERC. The third subsample (labeled as NSF-W) has been called the “NSF women only” subsample, as it was funded by a grant to Nancy Carter from the National Science Foundation (NSF) to study women nascent entrepreneurs. The fourth subsample (labeled as NSF-MIN) is known as the “NSF minority over-sample,” as it was funded through a grant to Patricia Greene from the NSF to study minority nascent entrepreneurs. Finally, a fifth subsample (labeled as CG-MIN) was collected that focused on a “minority over-sample comparison group,” that was also funded by the NSF grant to Greene.

Because the two different NSF grants came several months apart, the national screening process for identifying nascent entrepreneurs occurred over two broad time periods. Screening of individuals targeted for the nascent entrepreneur ERC group began in July of 1998 and ended in April of 1999. Screening of individuals targeted for the NSF-W over sample began in September of 1998 and ended in December of 1998. Together, these two samples of potential nascent entrepreneurs comprised a total of 31,261 individuals.

Screening for the CG-ERC comparison group began and was completed in November of 1998 with a total of 2,010. Screening for the NSF-MIN over sample began in July of 1999 and ended in January of 2000 with a case listing of 28,314 people. Finally, screening of the CG-MIN, over sample comparison group began and ended in November of 1999 with a case listing of 3,037 people. Thus, a grand total of 64,622 individuals were screened between July of 1998 and January of 2000. The characteristics of the various subsamples in the SCREENER are listed in Table I.

Whether members of the comparison groups were themselves involved in start-up activity was unfortunately not asked of the Mixed Gender Comparison Group (the CG-ERC subsample). Follow-up interviews with these individuals revealed that four of them had in fact started businesses, and in subsequent analyses using the SAMPLE dataset these four individuals are dropped. Within the Minority Over-sample Comparison Group (the CG-MIN) subsample, a total of 29 individuals reported some start-up activity, and so these individuals were also dropped in analyses using the SAMPLE dataset. Details of the distribution of males and females

for the various sub-samples and descriptions of the decision rules for identifying nascent entrepreneurs is found in (Shaver et al., 2001). Because of the oversight about start-up activity in the comparison group, the CG-ERC subsample (2010 respondents) was dropped in analyses using the SCREENER. In addition, another 40 respondents were dropped from analyses using the SCREENER because of problems with various variables that made these cases suspect. Therefore, the SCREENER reports on analyses using 62,612 respondents.

4. Defining and identifying nascent entrepreneurs

The purpose of the SCREENER was to identify a sample of nascent entrepreneurs and a comparison group to be subsequently interviewed. To be identified in the SCREENER as a “nascent entrepreneur” a respondent had to say, “YES” to either one or both of the following questions:

- (1) Are you, alone or with others, now trying to start a new business?
- (2) Are you, alone or with others, now starting a new business or new venture for your employer? An effort that is part of your job assignment?

AND meet two addition criteria: (a) be currently active in the startup effort, (b) anticipate full or part ownership of the new business. Individuals who met these criteria were considered “two-criteria” respondents.

Individuals that answered yes to either (6.1% to the first and 2.8% to the second) or both (1.2%) of these questions were then asked about the additional criteria ($a + b$). About 87% of those respondents that met the $a + b$ criteria provide their first name and phone number for subsequent detailed interviews by the University of Wisconsin Survey Research Laboratory in Madison, Wisconsin.

A similar procedure is used to identify candidates for the comparison group, except that all respondents in the sample were offered a chance to participate in a “study of the work and career patterns of all Americans, including those not currently working.” In this case, 62% agreed to participate.

In the initial stage of the detailed interviews completed by the University of Wisconsin Survey Research Laboratory (UWSRL) a third criterion was imposed to qualify respondents as a nascent entrepreneur. Namely, whether the start-up initiative was actually in the startup stage, or whether they were already an infant business. An infant business was considered to be a business in which the startup effort had a positive monthly cash flow that covered expenses and salaries for the owner/manager for more than three months (91 days). A series of four questions were used to determine if the start-up had NOT yet attained positive monthly cash flow that covered expenses and the owner-manager salaries for more than three months:

1. Question 162: first year in which money, income, or fees were received.
2. Question 164: first year in which there was positive monthly cash flow.
3. Question 165: whether business expenses included owner’s salary.
4. Question 166: first year in which expenses included owner’s salary.

Each of the “year” questions was followed by a corresponding “month” question (162a, 164a, 166a) to specify the timing more precisely. If the effort was determined to be an infant business and not a start-up effort the respondent was thanked for their time and dropped from the study. *Approximately one-fourth [27%] of the cases failed to meet the third qualifying criteria and were judged to have “baby businesses”, new firms already in the first stages of operational existence. Failing to qualify as “three-criteria” nascent entrepreneurs, they were dropped from the study, reflecting the ambiguity associated with the phrase “starting a business.”*

Only if the respondent met all three criteria (actively involved in a startup, anticipating full or part ownership, and lack of positive cash flow that covered owner/manager salaries) did they received the full 60-minute phone and 12 page self-administered questionnaire. If the respondent was involved in several start-up efforts, they were asked to focus on only the most recent start-up effort. *Up to one-third of the nascent entrepreneurs reported simultaneous participation in several start-ups.*

Characteristics of the interviews

The detailed interviews covered a wide range of topics through a phone and a mail survey. Nascent entrepreneurs completed a phone interview that averaged 60 minutes in length, with a range of 35 to 90 minutes. A similar procedure was followed with the comparison group, except that only a randomly selected subset of respondents was taken from those that volunteered during the national screening. This phone interview took about 25 minutes to complete.

At the completion of the phone interview, all respondents – the nascent entrepreneurs and the comparison group – were asked if they would be willing to complete a brief (12 page or 10 page) self-administered questionnaire. Ninety-eight percent agreed to consider completing the self-administered questionnaire. After repeated post-card reminders, mailings, and phone calls, 68% of the nascent entrepreneurs and 77% of the comparison group respondents returned the mail questionnaire and were given a token payment of \$35.00.

Potential nascent entrepreneurs were more interested in volunteering for the project than those in the comparison group, 87% versus 62%; but those in the comparison group are more likely to complete all aspects of the data collection procedure, they have a 10% higher return rate on the mailed questionnaires.

The time and effort required to obtain completed phone interviews is indicated by the time lags between the initial screening and the phone interview, which average 51 days for nascent entrepreneurs and 62 days for the comparison group respondents, with a maximum of 250 days. It is also reflected in the lag between completion of the phone interview and receipt of the mail questionnaire, which averages 51 and 37 days, respectively, for nascent entrepreneurs and comparison group respondents, with a maximum of 337 days. Further, the number of contacts required to obtain the phone interviews averages 8 for nascent entrepreneurs and 5 for the comparison group, with a maximum of 74. Twenty-five percent of the nascent entrepreneur phone interviews required more than 9 calls and 25% of the comparison group phone interviews required more than 7 calls.

Reactions of the respondents are measured in several ways. Nascent entrepreneurs were asked, at the end of the phone interview, how the experience affected their interest in starting a new firm: 59% said it increased their interest, 39% said it had no effect, and 1.2% indicated that it reduced their interest in starting a new firm. In fact, the positive effect may cause some problems, for some may claim that participation in the project may increase interest and, because of the content of the interview schedules, business knowledge of the nascent entrepreneur participants. This may improve their chances for business success. In a sense, the Heisenberg effect in research, that collecting data from a phenomenon takes energy from the process under study, may be offset by the Hawthorne effect, that a known research focus on work activity may lead to higher levels of work productivity.

The most difficult issue on which to get responses in survey research are details regarding household financial status. It is easier to get candid responses about drug use, deviant or extra-marital sexual behavior, cheating on income tax returns, and almost any other personal activity. In this project, however, over 95% of the nascent entrepreneurs and 98% of the comparison group provided information on both household income and net worth. On the self-administered questionnaires that were returned, 98% of the items are completed. In terms of respondent cooperation in survey research in the United States at the end of the twentieth century – this is as good as it gets!

This data collection process makes the PSED a very valuable database to scholars, public policy makers, and practitioners for a number of reasons. First, the PSED is a sample of nascent entrepreneurs questioned while they were in the process of getting into business. By collecting “real time” information about nascent entrepreneurs, we have knowledge of their current expectations and thought processes while in the act of starting firms, rather than the reminiscences of these entrepreneurs after the fact. Second, the PSED is a sample of nascent entrepreneurs that reflects a variety of attempts to get into business, not just a sample of those individuals who were successful at starting firms. By collecting information about a variety of start up efforts and following all of these efforts over time, the PSED sample can be

used to differentiate between the characteristics of successful and failed efforts to create a new business. Finally, the PSED is a sample of nascent entrepreneurs and a comparison group. The PSED can be used to compare nascent entrepreneurs to the population of working age adults across a wide variety of demographic, economic, social, and psychological factors.

5. The PSED datasets

There are two major PSED datasets that are available for scholars to analyze and study. The first dataset is known as the SCREENER. The SCREENER dataset contains information on all 64,662 individuals that were contacted by telephone. The interviews provided 14 socio-demographic variables on the individual and their household, including the country and state where the household was located along with four questions that screen for start-up activity within the household. Because contact information for the respondent was included in the socio-demographic variables, a large number of county related variables can be added to the records from other data sources (e.g., census). Adding these variables provides information on the economic and social context (including national conditions and local conditions) of these respondents. Sixty such variables have been attached for the following analyses. See Table II for a listing of the kinds of information captured in the SCREENER interview. The SCREENER dataset is useful for providing information on broad demographic variables for both the nascent entrepreneurs and the other respondents who indicated they were not involved in business startup activities. With such a large sample of individuals (64,622) the SCREENER is very useful for computing prevalence rates for nascent entrepreneurial activity as well as for comparisons between nascent entrepreneurs and others on the 181 variables available.

The second PSED dataset is known as the SAMPLE. The SAMPLE contains detailed information on the nascent entrepreneurs and the individuals in the comparison group who agreed to participate in the in-depth phone interviews and mail surveys. There are 1,261 respondents in the SAMPLE (830 nascent entrepreneurs and 431 in the comparison group). There are over 1,200

TABLE II
Variables in the SCREENER

<i>Socio-demographic characteristics of respondent</i>
Gender
Age education
Employment status
Marital status
Size of household
Home ownership
Household income
Ethnicity
Household location
– Region
– State
– Zip code
Head of household status
Primary shopper status
<i>Business start-up screener</i>
Autonomous start-up
Start-up on the job
Ownership of new business (all or part of)
Conducted start-up acts within last 12 months

variables in this dataset for most of these respondents – most provided from the phone and mail interview schedules. The SAMPLE provides information about the nascent entrepreneurs and the comparison group on their personal context including work and family responsibilities, their social networks, personal background and work experiences, personal dispositions, decision making styles, risk preferences, and aspirations. In addition, for the nascent entrepreneurs there is detailed information on the nature and sequence of the start-up activities pursued in the firm creation process; the sources and kinds of resources used; and the strategic focus, kinds of industries, and characteristics of the markets where the prospective firms are intended to compete. Follow-up information on the nascent entrepreneurs was also collected 12 and 24 months after the first interview. The variables in the follow-ups are similar to information collected in the first interviews, except, that for those cases where firms have been started; information on the characteristics of these new firms was collected. Table III provides examples of some of the variables in the SAMPLE dataset. A complete listing is available at: <http://projects.isr.umich.edu/psed/>.

The findings presented in this paper involve the detailed data from the SCREENER, which reflects

TABLE III
Examples of variables in the SAMPLE

	Nascent entrepreneurs	Comparison group
Work and career experience*	x	x
Work participation histories*	x	x
Family business background*	x	x
Social network*	x	x
Household structure*	x	x
Household net worth*	x	x
Perceptions of entrepreneurial climate*	x	x
Risk assessment*	x	x
Social skills assessment*	x	x
Time use diaries*	x	x
Opportunity recognition assessment	x	
Startup activities	x	
Startup team efforts	x	
Competitive strategy	x	
Future expectations	x	

comparisons among *two-criteria* nascent of different ethnic backgrounds as well as with appropriate comparison group individuals. The unweighted counts of respondents by ethnic identification are indicated for the two types of analyses in Table IV.

The attrition between the screening sample and the detailed data on nascent entrepreneurs reflects both losses during the data collection process as well as purposeful sampling from the screened population to enhance the female and minority

detailed samples. The slight under-representation of Hispanics in the screening sample reflects the practice, for this study, of restricting all interviews to English.

Ethnic identity was determined in two different ways in the two surveys. In the screening interviews, individuals were asked two questions; one related to whether respondents considered themselves as white, Black, Asian, or other. The second question asked respondents whether they considered themselves as Hispanic or Latino: yes or no. In order to create a single variable, any person who responded, "white" or "Other" to the first item and "yes" to the Hispanic item was considered Hispanic. Of those in the Hispanic Category, 44% responded, "white" to the first item, the remainder responded as "Other." Among those retained in the "Black" category 3% had responded "yes" to the Hispanic item as had 8% of those in the "Asian" category. The ethnic identification of the respondents is not, therefore, unambiguous in every case. In the detailed interview, each respondent answered a single item, related to ethnic identification as white, Black, Hispanic, American Indian, Asian, etc. Among those in the detailed interviews classified as "white," 92% were in the "white" category for the screening interviews; 94% of those "Black" and "Hispanic" in the detailed categories were in the same category for the screening interviews. It should be noted that some of this "switching" reflects a change in actual respondent reporting on the start-up effort, which is often a team initia-

TABLE IV
Number of respondents: By state of data collection and ethnic background

[Unweighted counts]	Screening sample: Not two-criteria nascent entrepreneurs	Screening sample: Two-criteria nascent entrepreneurs	Detailed sample: Three-criteria nascent entrepreneurs	Detailed samples: Comparison
Whites	46,289	2,726	492	191
Blacks	5,156	547	210	139
Hispanics	3,519	258	57	69
Asians	1,016	53	11	6
Others	1,427	122	14	20
No information	1,431	68	46	6
Column totals	58,838	3,774	830	431
Total each sample		62,612 SCREENER		1,261 SAMPLE

tive and different members of the team (often spouses) were interviewed at these two different points in the data collection process.

6. Total population estimates: how many startup attempts in the U.S.?

As can be seen in Table V, about 6.2 per 100 U.S. adults, all those over 18 years old, are engaged in trying to start new firms. The prevalence rate for men of all ages, 18 and up, is 8.1 per 100, about twice that for all women 18 and older, which is 4.5 per 100. Therefore, women are about one third of those involved in firm start-ups. Proportionally, this means that even though men and women are roughly equal in numbers in the population, a man is twice as likely to start a new business as a woman. There appear, as of the late 1990's, to be about 10.1 million adults in the U.S. attempting to create a new business. Among whites, about 7.7 million are nascent entrepreneurs, among Blacks it is 1.8 million, and among Hispanics it is 1.1 million. These numbers exceed 10.1 million because of differences between official U.S. census data on Hispanics, which includes those who also identify with other races.

These prevalence rates are based on respondents meeting the two-criteria definition of nascent entrepreneur. The attrition due to initiatives being considered infant businesses suggests that the actual prevalence rate of three-criteria nascents would be about three-fourths that of two-criteria nascents. On the other hand, the three callback criteria utilized in the SCREENER – three calls to each randomly selected phone number – led to a lower prevalence rate. The prevalence rate for two-criteria nascent entrepreneurs among three callback respondents was 6.2 per 100, compared to 7.5 per 100 for the five to nine callback respondents. This 21% higher prevalence rate is statistically significant.

These two sources of attrition may, therefore offset each other. The prevalence rate of two-criteria nascent entrepreneurs with a 3 call-back operational criteria may be equal to the prevalence rate of three-criteria nascent entrepreneurs with a 9-call back operational criteria. The impact of more callbacks on the prevalence rate reflects the extreme time pressures on nascent entrepreneurs, most of whom have a full time role in the labor

force at the same time they are trying to start a new business. They are difficult to find and interview precisely because they are so busy trying to implement a new business.

The details associated with making the two-criteria estimates involve using the results from the screener sample of 62,612 households (removing the 2,010 in the CG-ERC sample not asked about start-up activity) to estimate the size of the total population. In order to improve the precision of these estimates, counts are computed for each of four age categories, by gender, for all U.S. adults, whites, Blacks and Hispanics. The standard error of the mean is used to provide a range of counts [the 95% confidence interval] for each age and gender category. The total number of U.S. residences in each category is multiplied by the prevalence rate from the sample to provide an estimated count; the upper and lower estimates are carried through the computation in the same way.

What do these high estimates mean? A lot of energy is being devoted to creating new businesses in the U.S. The average startup team is about 1.8 people, even though over 40% are sole-proprietorships (Ruef et al., 2002). This suggests that 10.1 million nascent entrepreneurs are attempting to put 5.6 million new firms in place. Marriages and births may also be considered a widespread feature of adult life: there were 2.4 million marriages and 3.9 million live births in the U.S. in 1997 [Tables 92 and 155, Statistical Abstract of the United States: 1999]. In short, the creation of a new firm is more widespread than the creation of a new household or a baby born in society.

Age and gender

As can be seen in Table VI, at every age category, men and women are starting businesses: with a low of three out of every 1,000 women (0.3%) over the age of 65 in the start-up process to a high of 11.3 out of every 100 men (11.3%) in the 25–34 year age category. The 95% confidence intervals are illustrated by the upper case “X” in brackets, [XXX]. The prevalence rate for men of all ages, 18 and up, is 8.1 per 100, about twice that for all women 18 and older, which is 4.5 per 100. In general, women are one third of those involved in firm start-ups. The effect of age is also sub-

TABLE V
Estimated number of two criteria nascent entrepreneurs in the U.S.: By age, gender, and ethnic identity

	U.S. Count: 1997 (1,000) ¹	Two-criteria nascent entre's (#/100)	Std error of the mean	Number of two- criteria nascent Entrepreneurs; Estimated (1,000)	95% confidence interval, low (1,000)	95% confidence interval, high (1,000)	Age adjusted estimate of NE prevalence rates (#/100)
<i>ALL</i>							
Men: 18–24 yrs	12,993	9.1	0.50	1,186	1,059	1,314	
Men: 25–44 yrs	41,355	10.6	0.30	4,379	4,136	4,623	
Men: 45–64 yrs	27,705	7.2	0.30	1,989	1,826	2,152	
Men: 65+ yrs	14,198	1.2	0.20	169	113	225	
Men: All yrs	96,251			7,724	7,135	8,313	8.0
Women: 18–24 yrs	12,478	4.1	0.30	514	441	587	
Women: 25–44 yrs	41,939	6.6	0.20	2,764	2,599	2,928	
Women: 45–64 yrs	29,556	4.3	0.20	1,262	1,146	1,378	
Women: 65+ yrs	18,203	0.4	0.01	64	60	67	
Women: All yrs	102,176			4,604	4,246	4,961	4.5
All adults	198,427			12,328	11,381	13,274	6.2
<i>WHITE</i>							
Men: 18–24 yrs	10,413	8.5	0.60	889	767	1,012	
Men: 25–44 yrs	34,137	9.9	0.30	3,380	3,179	3,580	
Men: 45–64 yrs	23,896	6.9	0.30	1,644	1,504	1,785	
Men: 65+ yrs	12,691	1.2	0.20	147	97	197	
Men: All yrs	81,137			6,060	5,547	6,574	7.5
Women: 18–24 yrs	9,871	3.7	0.40	364	287	442	
Women: 25–44 yrs	33,881	6.1	0.20	2,080	1,947	2,213	
Women: 45–64 yrs	24,936	4.0	0.20	1,002	905	1,100	
Women: 65+ yrs	17,934	0.3	0.01	61	57	64	
Women: All yrs	86,622			3,508	3,819	3,819	4.0
All adults	167,759			9,568	8,743	10,393	5.7
<i>BLACK</i>							
Men: 18–24 yrs	1,915	12.9	1.70	247	183	311	
Men: 25–44 yrs	5,139	15.9	1.00	816	715	917	
Men: 45–64 yrs	2,683	9.7	1.20	260	197	323	
Men: 65+ yrs	1,118	0.4	0.40	4	0	13	
Men: All yrs	10,855			1,327	1,096	1,564	12.2
Women: 18–24 yrs	1,939	5.6	1.00	110	72	148	
Women: 25–44 yrs	5,772	9.9	0.80	572	482	663	
Women: 45–64 yrs	3,336	6.9	0.90	229	170	288	
Women: 65+ yrs	1,734	0.8	0.50	15	0	32	
Women: All yrs	12,781			925	723	1,130	7.2
All adults	23,636			2,253	1,819	2,694	9.5
<i>HISPANIC</i>							
Men: 18–24 yrs	1,915	10.1	1.40	193	140	245	
Men: 25–44 yrs	5,001	11.4	1.00	570	472	668	
Men: 45–64 yrs	2,080	7.5	1.50	155	94	217	
Men: 65+ yrs	740	4.4	2.30	33	0	66	
Men: All yrs	9,736			951	707	1,196	9.8
Women: 18–24 yrs	1,773	5.1	1.00	90	55	125	
Women: 25–44 yrs	4,722	5.8	0.80	272	198	346	
Women: 45–64 yrs	2,262	3.3	0.90	75	35	115	
Women: 65+ yrs	1,023	0.0	0.00	0	0	0	
Women: All yrs	9,780			437	288	585	4.5
All Adults	19,516			1,388	995	1,781	7.1

¹ Population counts from Tables 21 and 23 for 1997, Statistical Abstracts of the United States: 1999, 119th Edition.

TABLE VI
Nascent entrepreneurs prevalence rates, U.S. sample: By age and gender

	Women				Men			
	Mean	SE	Low 95%- confidence interval	High 95%- confidence interval	Mean	SE	Low 95%- confidence interval	High 95%- confidence interval
18–99 years old	4.50	0.10	4.31	4.69	8.10	0.20	7.71	8.49
18–24 years old	4.10	0.30	3.51	4.69	9.10	0.50	8.12	10.08
25–34 years old	6.80	0.30	6.21	7.39	11.30	0.40	10.52	12.08
35–44 years old	6.40	0.30	5.81	6.99	10.00	0.40	9.22	10.78
45–54 years old	5.70	0.30	5.11	6.29	8.60	0.40	7.82	9.38
55–64 years old	2.30	0.20	1.91	2.69	5.10	0.40	4.32	5.88
65–99 years old	0.30	0.01	0.28	0.32	1.20	0.20	0.81	1.59

Any comparison between women and men where the confidence intervals do not overlap is statistically significant at the 0.5 level.

stantial. The highest prevalence rate is among those 25–54 years old, although young men, 18–24 years, are relatively more active than in previous samples obtained in 1993 (Reynolds and White, 1997); there also has been a relative increase among men 35–54 years in age.

Ethnic differences in participation

Table VII presents a comparison of the prevalence rates for getting into business for men and women by ethnic background. This analysis is restricted to those 18–64 years of age, the age where participation in the labor force is expected. Note that the rates for Black men and Black women is about 50% higher than that for whites and the difference is statistically significant. The rate for Hispanic men is about 20% higher than for white men, but the difference is not statistically significant. The rate for Hispanic women in the sample is equal to that of white women, and below that of Black women. Except for those 55 to 64 years in age, the prevalence rates for Black men and women are consistently higher than that for white men and women, although the differences are not always statistically significant. The prevalence rates for Hispanic men is consistently higher than for white men for all ages below 55 years, although the differences are not statistically significant. Note also the dramatic drop among Hispanic women after the age of 34, a drop not reflected in the data for white or Black women

until they reach the middle fifties. This would suggest that the social role of Hispanic women after their mid-thirties is somewhat different than that of white and Black women.

Education and Nascent entrepreneurship activity

Table VIII shows the impact of educational attainment upon the prevalence rate of nascent entrepreneurs. The most dramatic difference in patterns for different ethnic groups is associated with educational attainment. Among both white men and women, there is a slight increase of participation among those with more education. Among Black men and women and Hispanic men there is a substantial difference, with those reporting any graduate training two to three times more likely to be involved in a firm start-up. Black and Hispanic men with graduate experience are at least twice as likely to be involved in a start-up compared to white men with graduate experience. There seems to be little systematic differences among Hispanic women. Although those with the least education are more likely to report participation in a start-up, the difference is not statistically significant.

Household income and nascent entrepreneurship activity

Table VIII also shows the differences across levels of household income. Like those with high edu-

TABLE VII
Nascent entrepreneurs prevalence rates: By age, gender, and ethnic identity

	Women				Men			
	Mean	SE	Low 95%- confidence interval	High 95%- confidence interval	Mean	SE	Low 95%- confidence interval	High 95%- confidence interval
<i>ALL: 18–64 years old</i>								
White	5.10	0.20	4.71	5.49	8.60	0.20	8.21	8.99
Black	8.30	0.50	7.32	9.28	13.60	0.70	12.23	14.97
Hispanic	5.10	0.50	4.12	6.08	10.30	0.70	8.93	11.67
<i>WHITE</i>								
18–24 years old	3.70	0.40	2.92	4.48	8.50	0.50	7.52	9.48
25–34 years old	6.30	0.40	5.52	7.08	10.90	0.50	9.92	11.88
35–44 years old	6.00	0.30	5.41	6.59	9.10	0.40	8.32	9.88
45–54 years old	5.40	0.30	4.81	5.99	8.10	0.40	7.32	8.88
55–64 years old	2.20	0.30	1.61	2.79	5.10	0.40	4.32	5.88
<i>BLACK</i>								
18–24 years old	5.60	1.00	3.64	7.56	12.90	1.70	9.57	16.23
25–34 years old	10.10	1.10	7.94	12.26	15.60	1.40	12.86	18.34
35–44 years old	9.70	1.10	7.54	11.86	16.20	1.50	13.26	19.14
45–54 years old	9.40	1.40	6.66	12.14	12.10	1.60	8.96	15.24
55–64 years old	2.90	1.00	0.94	4.86	5.50	1.50	2.56	8.44
<i>HISPANIC</i>								
18–24 years old	5.10	1.00	3.14	7.06	10.10	1.40	7.36	12.84
25–34 years old	7.50	1.20	5.15	9.85	12.20	1.40	9.46	14.94
35–44 years old	3.60	0.90	1.84	5.36	10.40	1.50	7.46	13.34
45–54 years old	4.20	1.30	1.65	6.75	10.00	2.10	5.88	14.12
55–64 years old	1.40	1.10	0.76	3.56	2.50	1.50	0.44	5.44

Any comparison between women and men where the confidence intervals do not overlap is statistically significant at the 0.5 level.

cational attainment, only modest differences exist among Whites with high levels of household income. Much larger differences exist among Black and Hispanic men and women. Those with higher incomes are more likely to be involved in a start-up. The same pattern is found among white women but not white men; there is no statistically significant difference in the prevalence rate among white men with different levels of household income.

Dwelling ownership and nascent entrepreneurship activity

Dwelling ownership seems to be associated with higher levels of entrepreneurial activity, but it is statistically significant only for Black men (see Table VIII). In terms of both measures the

causality is unclear. While it is plausible that access to financial resources (earned income or home equity) may facilitate developing a start-up business, Black men more involved in entrepreneurship may have higher personal income and dwelling ownership.

Labor force participation and nascent entrepreneurship activity

Labor force participation shows the same patterns for both genders and all ethnic categories. Those 18–54 years old not involved in the labor force – housewives, retirees, unemployed, students, etc. – are less likely to be involved in business start-up than those with full or part time jobs. See Table VIII.

TABLE VIII
 Nascent entrepreneurs prevalence rates: By ethnic identity, education, household income, dwelling ownership and labor force participation [18–54 years old]

	Women				Men			
	Mean	SE	Low 95%-confidence interval	High 95%-confidence interval	Mean	SE	Low 95%-confidence interval	High 95%-confidence interval
<i>WHITE</i>								
Graduate experience	7.60	0.60	6.42	8.78	11.10	0.70	9.73	12.47
College degree	5.60	0.40	4.82	6.38	9.60	0.50	8.62	10.58
Post HS/No college	6.00	0.40	5.22	6.78	10.00	0.50	9.02	10.98
HS degree	4.80	0.30	4.21	5.39	7.70	0.40	6.92	8.48
No HS degree	4.20	0.60	3.02	5.38	9.00	0.90	7.24	10.76
<i>BLACK</i>								
Graduate experience	15.60	2.90	9.92	21.28	23.40	4.20	15.17	31.63
College degree	12.70	1.60	9.56	15.84	15.20	2.10	11.08	19.32
Post HS/No college	11.40	1.20	9.05	13.75	15.80	1.60	12.66	18.94
HS degree	4.30	0.70	2.93	5.67	12.00	1.20	9.65	14.35
No HS degree	6.10	1.50	3.16	9.04	12.70	2.40	8.00	17.40
<i>HISPANIC</i>								
Graduate experience	15.60	2.90	9.92	21.28	19.90	3.80	12.45	27.35
College degree	12.70	1.60	9.56	15.84	11.00	2.00	7.08	14.92
Post HS/No college	11.40	1.20	9.05	13.75	12.50	1.70	9.17	15.83
HS degree	4.30	0.70	2.93	5.67	9.80	1.20	7.45	12.15
No HS degree	6.10	1.50	3.16	9.04	7.40	1.70	4.07	10.73
<i>WHITE</i>								
HH INC: >\$75K/YR	6.90	0.60	5.72	8.08	9.60	0.70	8.23	10.97
HH INC: \$21–75K/YR	5.90	0.20	5.51	6.29	9.20	0.30	8.61	9.79
HH INC: <\$20K/YR	3.70	0.40	2.92	4.48	7.60	0.70	6.23	8.97
<i>BLACK</i>								
HH INC: >\$75K/YR	10.50	2.50	5.60	15.40	13.70	2.80	8.21	19.19
HH INC: \$21–75K/YR	11.40	0.90	9.64	13.16	15.00	1.00	13.04	16.96
HH INC: <\$20K/YR	3.50	0.80	1.93	5.07	11.30	1.80	7.77	14.83
<i>HISPANIC</i>								
HH INC: >\$75K/YR	10.50	2.50	5.60	15.40	16.60	3.00	10.72	22.48
HH INC: \$21–75K/YR	11.40	0.90	9.64	13.16	10.90	1.00	8.94	12.86
HH INC: <\$20K/YR	3.50	0.80	1.93	5.07	8.20	1.80	4.67	11.73
<i>WHITE</i>								
Dwelling owned	5.70	0.20	5.31	6.09	9.40	0.30	8.81	9.99
Dwelling not owned	5.40	0.30	4.81	5.99	9.10	0.40	8.32	9.88
<i>BLACK</i>								
Dwelling owned	9.20	0.90	7.44	10.96	15.80	1.10	13.64	17.96
Dwelling not owned	8.60	0.80	7.03	10.17	12.40	1.10	10.24	14.56
<i>HISPANIC</i>								
Dwelling owned	9.20	0.90	7.44	10.96	11.90	1.10	9.74	14.06
Dwelling not owned	8.60	0.80	7.03	10.17	9.80	1.10	7.64	11.96
<i>WHITE</i>								
Full-time Work	5.50	0.20	5.11	5.89	9.60	0.30	9.01	10.19
Part-time Work	6.80	0.50	5.82	7.78	9.80	0.90	8.04	11.56
Not working	4.90	0.40	4.12	5.68	5.50	0.60	4.32	6.68

TABLE VIII (Continued)

	Women				Men			
	Mean	SE	Low 95%- confidence interval	High 95%- confidence interval	Mean	SE	Low 95%- confidence interval	High 95%- confidence interval
<i>BLACK</i>								
Full-time Work	9.30	0.80	7.73	10.87	15.80	1.00	13.84	17.76
Part-time Work	9.50	1.60	6.36	12.64	13.00	2.50	8.10	17.90
Not working	7.10	1.10	4.94	9.26	7.10	1.50	4.16	10.04
<i>HISPANIC</i>								
Full-time Work	9.30	0.80	7.73	10.87	11.60	0.90	9.84	13.36
Part-time Work	9.50	1.60	6.36	12.64	12.00	2.60	6.90	17.10
Not working	7.10	1.10	4.94	9.26	6.40	1.80	2.87	9.93

Any comparison between women and men where the confidence intervals do not overlap is statistically significant at the 0.5 level.

Marital status and nascent entrepreneurship activity

Table IX indicates that, in broad terms, the differences related to marriage appear to be small and varied. Married women are more likely to be involved in start-ups, but it is statistically significant only for Black women. Unmarried white and Black men are more likely to be involved in start-ups, but it is statistically significant only for white men.

Size of household and nascent entrepreneurship activity

Table IX shows that the size of the household has no statistically significant relationship to nascent entrepreneurship prevalence rate for any of the respondent categories.

Age of children in the household and nascent entrepreneurship activity

An adult respondent may have children in any of the three age groups: 0–5 years, 6–12 years, and 13–17 years old. As a consequence, all comparisons in Table IX are between those with and without any children in that age group. In most cases there is no statistically significant difference, but in those where there is a significant difference, those with children in the household are more

likely to report they are involved in a business start-up.

Regional factors and nascent entrepreneurship activity

The SCREENER sample contains a substantial amount of information for each person on demographic and economic information on the counties in which these individuals reside. Since the SCREENER of over 64,000 respondents is distributed among the 3,124 U.S. counties in proportion to the population of the counties, there are very few counties where the sample is large enough to provide a stable estimate of the prevalence of nascent entrepreneurs, by gender and ethnic background, in each county. But, comparisons can be made based on the characteristics of the counties.

We offer one example of how the county data can be utilized to provide insights into the likelihood that areas with certain demographic and economic characteristics might have higher rates of new business formation activity. We selected five measures of the urban character of the counties that are available in the screening data. These include the percent of the population 25–44 years in age in 1990; the percent of the population with college degrees in 1990; the per capita income in 1993, the percentage of households with annual incomes of \$75,000 or more in 1989; and

TABLE IX
 Nascent entrepreneurs prevalence rates: By ethnic identity, marital status, household size, children in household
 [18–54 years old]

	Women				Men			
	Mean	SE	Low 95%- confidence interval	High 95%- confidence interval	Mean	SE	Low 95%- confidence interval	High 95%- confidence interval
<i>WHITE</i>								
Married	5.70	0.20	5.31	6.09	8.60	0.30	8.01	9.19
Not married	5.40	0.30	4.81	5.99	10.20	0.40	9.42	10.98
<i>BLACK</i>								
Married	10.40	1.00	8.44	12.36	13.80	1.20	11.45	16.15
Not married	7.90	0.70	6.53	9.27	14.60	1.10	12.44	16.76
<i>HISPANIC</i>								
Married	10.40	1.00	8.44	12.36	12.10	1.20	9.75	14.45
Not married	7.90	0.70	6.53	9.27	9.90	1.00	7.94	11.86
<i>WHITE</i>								
1–2 person HH	5.60	0.30	5.01	6.19	9.40	0.40	8.62	10.18
3–4 person HH	5.40	0.30	4.81	5.99	9.00	0.30	8.41	9.59
5–9 person HH	6.30	0.50	5.32	7.28	9.70	0.60	8.52	10.88
<i>BLACK</i>								
1–2 Person HH	9.80	1.10	7.64	11.96	11.80	1.20	9.45	14.15
3–4 Person HH	7.30	0.80	5.73	8.87	16.30	1.30	13.75	18.85
5–9 Person HH	10.20	1.30	7.65	12.75	14.50	1.90	10.78	18.22
<i>HISPANIC</i>								
1–2 person HH	9.80	1.10	7.64	11.96	9.90	1.40	7.16	12.64
3–4 person HH	7.30	0.80	5.73	8.87	11.10	1.20	8.75	13.45
5–9 person HH	10.20	1.30	7.65	12.75	12.40	1.70	9.07	15.73
<i>WHITE</i>								
No kids	5.20	0.30	4.61	5.79	9.30	0.30	8.71	9.89
Any kids: 0–5 years old	6.40	0.40	5.62	7.18	10.00	0.50	9.02	10.98
Any kids: 6–12 years old	6.10	0.30	5.51	6.69	10.00	0.50	9.02	10.98
Any kids: 13–17 years old	4.80	0.50	4.40	5.28	8.20	0.50	7.22	9.18
<i>BLACK</i>								
No kids	8.70	1.00	6.74	10.66	13.00	1.10	10.84	15.16
Any kids: 0–5 years old	9.00	1.00	7.04	10.96	15.50	1.70	12.17	18.83
Any kids: 6–12 years old	8.80	1.00	6.84	10.76	15.40	1.60	12.26	18.54
Any kids: 13–17 years old	9.00	1.20	6.65	11.35	15.50	1.80	11.97	19.03
<i>HISPANIC</i>								
No kids	8.70	1.00	6.74	10.66	10.10	1.10	7.94	12.26
Any kids: 0–5 years old	9.00	1.00	7.04	10.96	12.70	1.50	9.76	15.64
Any kids: 6–12 years old	8.80	1.00	6.84	10.76	12.30	1.60	9.16	15.44
Any kids: 13–17 years old	9.00	1.20	6.65	11.35	8.80	1.50	5.86	11.74

Any comparison between women and men where the confidence intervals do not overlap is statistically significant at the 0.5 level.

a measure of income disparity, the ratio of households with annual incomes of \$75,000 or more as a proportion of households with annual incomes of \$15,000 or less in 1989. Because the five

measures are highly intercorrelated (the cronbach measure of reliability was 0.89), an index was computed that combined these five items. Respondents were sorted into four groups of equal

size using the urbanness measure. The results are presented in Table X.

The prevalence rates of the nascent entrepreneurs for the four quartiles of urban context range from 4.9 to 7.1 startup efforts per 100 adults. Information on the nature of urban context of the four quartiles, including the average values on the five items, typical counties in each category, and the percentage of respondents in each context from the four census areas of the U.S. is provided. All differences across the four categories, including the prevalence rate of nascent entrepreneurs, were highly statistically significant [$p > 0.0000$].

The comparisons between the lowest and highest quartile groups suggest some dramatic differences. For example, the highest quartile has 24% more of the population 25–44 years old; three times the percentage of the population with college degrees; the per capita income is 70% higher; the percentage of households with incomes in excess of \$75,000 per year in 1989 is five times greater; and the ratio of low to high income households goes from 0.11 to 1.34. Respondents in the most “urbanized” counties are found in all of the four regions of the U.S., although there are less urbanized counties in the Midwest and the largest

TABLE X
Urban context index: Selected characteristics

	Lowest quartile	Below average quartile	Above average quartile	Highest quartile
<i>Nascent entrepreneur prevalence rates: #/100</i>				
All respondents	4.9	5.6	6.6	7.1
White: Men	6.1	6.5	8.0	8.5
White: Women	3.2	3.6	4.4	4.8
Black: Men	9.5	10.4	14.3	12.4
Black: Women	4.5	6.9	7.3	9.1
Hispanic: Men [Not significant]	11.6	8.6	9.0	10.5
Hispanic: Women [Not significant]	4.9	4.6	4.1	4.6
<i>Urban Index Items</i>				
Percent of the population, 25–44 years old: 1990	28.8%	31.7%	33.0%	35.6%
Percentage of population with college degrees: 1990	10.8%	17.0%	21.6%	30.2%
Per capital income: 1993	\$15,700	\$16,084	\$21,080	\$26,799
Percentage of households with annual income \$75,000 and up: 1989	3.3%	7.3%	8.3%	16.8%
Income disparity: % HH with income \$75,000 in relation to HHs with income up to \$15,000	11.0%	30.9%	39.6%	133.7%
<i>Character of the counties</i>				
Typical counties	Montgomery, MS Cedar, NE Ida, IA Greenbriar, WV Mason, WA Defiance, OH	Mobile, AL Utah, UT Kerr, TX Wayne, MI Lancaster, PA Los Angeles, CA	Peoria, IL Dade, FL [Miami, FL] Allegheny, PA Queens, NY	Dakota, MN [Twin Cities, MN] Suffolk, NY [Long Island, NY] Orange, CA New York, NY Montgomery, MD [Washington, DC]
Percent in North East US	10%	16%	20%	31%
Percent in Southern US	50%	29%	34%	29%
Percent in Midwest US	29%	28%	24%	12%
Percent in Western US	11%	27%	22%	27%
Number of cases	16,181	16,178	16,103	16,160

percentage of respondents in the lowest quartile are in the Midwest and the South.

There are differential impacts of urban context on prevalence of entrepreneurial activity among the respondents by gender and ethnicity. As can be seen in Table X, for all respondents, the counties in the highest urban quartile have entrepreneurship prevalence rates of 7.1% compared to counties in the lowest urban quartile with entrepreneurship prevalence rates of 4.9%. For white men and women and Black women, prevalence rates increase with more urban contexts. For both male and female Hispanics, the highest levels of activity are among those in the least urban contexts though these differences are not statistically significant among the quartiles. For Black men the highest prevalence rate of entrepreneurial activity is in the above average quartile.

Two other contextual factors were considered, the population density, or number of persons per square mile, as well as the recent population change or the percentage population growth between 1980 and 1992. The correlations between these three features of the context are presented in Table XI for the 62,612 respondents. Although all correlations are statistically significant, even the negative correlation of -0.13 between population density and population growth, it is clear these reflect rather low levels of association. All three features have a positive and statistically significant impact on the prevalence rate for respondents, overall. Therefore, the greater the population density, the higher the rate of change in population, and the higher the change in population growth, the higher the prevalence rate for entrepreneurial activity.

There are a number of insights that result from this analysis of urbanness. In terms of broad categories like race and gender, the location of entrepreneurial activity matters. Overall, more urban areas seem to promote higher rates of entre-

preneurial activity. Yet for some groups, such as Hispanic men and women, characteristics of urbanness do not appear to promote higher levels of entrepreneurship indicating that some groups may be more affected by contextual factors than others. In other words, not all social and economic levers may act to stimulate entrepreneurship in the same way for all groups and individuals. Our preliminary analyses of other data in the PSED indicate support for this view.

7. Discussion

The PSED introduces a new measure of entrepreneurship. One technique to determine if this new data collection procedure provides accurate information would be to compare the results of this study with other procedures designed to describe the same phenomena. However, we could find no other procedure that has tried to estimate the proportion of the adult population in the U.S. that is involved in attempting to start a new business. Instead, other studies have estimated the number of existing businesses. Thus, the most relevant data are counts of new firms that have entered national data sets. For example, the U.S. Small Business Administration developed an estimate U.S. Census data on new business income tax and Social Security payment filings to identify the number of new firms with employees. They estimate that the total of such firms in the U.S. have been 590,000 in 1998, 588,000 in 1999 and 612,000 in the year 2000 (SBA, 2001, Table 3).

To compare the PSED estimates of nascent entrepreneurs with those of existing businesses computed by the SBA a number of steps are required:

- (1) A total count of U.S. nascent entrepreneurs is needed.
- (2) As most start-ups involve more than one potential owner, requiring an adjustment to the number of nascent businesses rather than nascent entrepreneurs.
- (3) A proportion of those nascent businesses having some ownership by another business, and these potential branches or subsidiaries also needs to be taken into account. This amounts to dropping start-up efforts that are not owned by individuals.

TABLE XI
Selected contextual factors: Intercorrelations

	Urban index	Population density	Population growth
Urban Index	1.00		
Population density	0.26	1.00	
Population growth	0.23	-0.13	1.00

TABLE XII
Estimate of total number of U.S. nascent entrepreneurs: 2000

	Population counts	% nascent entre	Std. error	Low	High	Mean
MEN: 18–24 yrs	13,286	8.60	0.50	1,012	1,273	1,143
MEN: 25–44 yrs	18,847	10.80	0.40	1,888	2,183	2,035
MEN: 35–44 yrs	22,269	9.80	0.40	2,008	2,357	2,182
MEN: 45–54 yrs	17,507	8.30	0.40	1,316	1,590	1,453
MEN: 55–64 yrs	11,157	4.50	0.40	415	590	502
MEN: 65–74 yrs	8,201	1.30	0.20	74	139	107
MEN: 75–99 yrs	6,111	0.50	0.20	7	55	31
	97,378			6,719	8,186	7,453
WOMEN: 18–24 yrs	12,751	3.90	0.30	422	572	497
WOMEN: 25–44 yrs	19,147	6.40	0.30	1,113	1,338	1,225
WOMEN: 35–44 yrs	22,575	6.10	0.30	1,244	1,510	1,377
WOMEN: 45–54 yrs	18,310	5.40	0.30	881	1,096	989
WOMEN: 55–64 yrs	12,249	2.20	0.20	221	317	269
WOMEN: 65–74 yrs	10,028	0.40	0.10	20	60	40
WOMEN: 75–99 yrs	10,222	0.20	0.10	5	40	20
	105,282			3,908	4,934	4,419
Total All	202,660			10,627	13,120	11,871

(4) The estimate needs to recognize that only a portion of the start-up efforts will actually become operating new firms; and

(5) That only a portion of the start-up efforts actually have formally hired employees.

To compare the results of the PSED with those of the U.S. Small Business Administration we completed these steps and estimated the number of firms with employees that would be expected to provide a first social security payment in 1999 or 2000.

The first step estimated the total number of nascent entrepreneurs (see Table XII). For each age and gender category, the expected value and the low and high 95% confidence interval values are displayed. Population data are U.S. Census Bureau estimates for the entire U.S. prepared on 13 January 2000 (NP-D!-A). The total is summed for all 14 categories. The median estimate is 11,871 thousand and the 95% confidence interval has a range of 10,627 to 13,120 thousand – plus or minus 10%.

Adjustments needed to provide a more precise comparison are displayed in Table XIII. Estimates shown are based on the weighted samples of participants who received the full, complete interview and, in addition, the sub-sample that received the first, or 12-month, follow-up. The estimates

shown compensate for the average start-up team of 1.8, and reduce the estimated number of start-up efforts to about 6,600,000. Of these, 87.6% are clearly independent efforts. The remaining have substantial, or full sponsorship by an existing business and may be expansions. Excluding these reduces the total number of independent start-ups

TABLE XIII
Estimated total number eligible for entry into SBA/Census registry

Total nascent entrepreneurs		11,861,000
Average number of owners per team	1.8	
Total start-up efforts		6,589,444
Owned fully by individuals	86.5	
Owned less than 50% by existing businesses	1.1	
Total independent start-ups		5,772,353
Filed first FICA payment at first interview	12.5	
Total eligible for entry into SBA/Census database		721,544
<i>Follow-up at one year:</i>		
Percentage reporting going firms	32.1	
Percentage still active in start-up effort	32.5	
Total nascent firms still viable		3,728,940
Filed first FICA payments by 2nd interview	16.6	
Total eligible for entry into SBA/Census database		619,004

to 5,800,000. In the first detailed interview, 12.5% of these firms had paid their first FICA payment, which would have been a total of 721,000 nascent businesses. This is close to the SBA estimate of 612,000 for the year 2000.

To further examine our estimate to existing measures we computed an estimate that takes into consideration the nascent firms interviewed in the first follow-up. Twelve months after the first interview, more than 64% of the nascent entrepreneurs reported either to have transitioned the effort to a going new business, or the future owners reported they were still active in trying to get the business started. This reduces the number of candidate nascent business ventures to 3,700,000. Of these, 16.6% reported they had filed their first FICA payment, for an estimate of 619,000 – extremely close to the SBA count of 612,000.

The results of this effort – where careful random samples of those in the start-up process were developed and detailed interviews assembled data to facilitate comparisons with existing registries of new firms – indicates congruence with estimates of established businesses, given the sample sizes and the loose correspondence in the time frames. The purpose of the PSED project was to capture the start-up process in the early stages and track the major events, including the actions that would lead the nascent business to be incorporated into existing business registries. It appears to have been successful in this regard.

An extension of this point of comparison would be the consideration of the existing firms reporting minority ownership. These numbers are available from a variety of government sources, including the Small Business Administration (SBA) and the Department of Commerce. Most recently, the SBA released *Minorities in Business, 2001* reporting on aspects of ownership, formation, management, financing, growth, and social and economic characteristics of minorities in business (SBA Office of Advocacy, 2001). This report showed that between 1982 and 1997 minority business ownership grew from 6.8 percent to 14.6 percent of U.S. firms (excluding C Corporations). Of these firms, 5.8 percent were owned by Hispanics and 4.0 percent owned by Blacks. These numbers represent a trend towards business ownership by members of minority groups. For Black-owned firms, the numbers increased 38 percent from

1982–1987, 46 percent from 1987–1992, and 26 percent from 1992–1997. The corresponding growth numbers for Hispanic business owners are 73 percent, 76 percent, and 30 percent (SBA Office of Advocacy, 2001). However, again it must be noted that these are businesses in operation. One of the underlying issues of the PSED is to probe whether there are areas of the entrepreneurial process that are less conducive to business emergence for Black or Hispanic nascent entrepreneurs.

8. Conclusions

There are numerous factors that influence entrepreneurial activity. The Panel Study of Entrepreneurial Dynamics (PSED) is the first national database to offer systematic, reliable and generalizable data on the process of business formation. This report provides an overview of the PSED research design and an overview of the information contained in the database. Results of analyses of data from the SCREENER, a sample of 64,622 individuals surveyed about their entrepreneurial activities, indicate that over 10.1 million individuals are actively engaged in starting new businesses in the United States. All categories of individuals (by gender, age, and ethnicity) are involved in entrepreneurship.

The primary and unique value of the PSED involves detailed information on a longitudinal sample of 830 nascent entrepreneurs and a comparison group of 431 non-entrepreneurs. Studies that utilize this sample promise to reveal never before gained insights into the characteristics of individuals involved in business formation, their activities, and the subsequent success of their efforts. Studies using the PSED longitudinal sample are, to date, primarily at the working paper and conference presentation stages. A few examples of current research efforts are provided below to illustrate the breadth of research issues that can be explored using the PSED dataset.

Comparisons between nascent entrepreneurs and the non-entrepreneurs on the reasons they offer for choosing to start businesses or select employment, indicate that, in general, nascent entrepreneurs are similar to non-entrepreneurs on such categories of reasons as financial security, independence, self-realization, and autonomy, and

that nascent entrepreneurs were less likely to be concerned with the roles, traditions and values of family, friends, and others in the community (Carter et al., 2003; Gartner et al., 2000). When comparing career reasons by ethnicity, Blacks are more likely to seek recognition, self-actualization, and innovation than whites, and Hispanics were more likely to seek recognition and be influenced by role models than whites (Carter et al., 2002).

Comparisons between nascent entrepreneurs and the non-entrepreneurs on such characteristics as financial and human capital found that prior person wealth and income did not significantly predict whether individuals would engage in business formation activity, but education and other forms of human capital (such as prior self-employment experience) are highly correlated to business formation activity (Crosa et al., 2002).

In studies of the process of team formation, women were more likely to start solo-owned businesses, while men were more likely to use teams. Most teams were likely to involve a spouse/partner, or another family member, but in those other situations, the team member was likely to be of the same sex as the lead entrepreneur. Nearly all team based business startups involved members with strong ties (Aldrich et al., 2002; Ruef et al., 2002).

In exploring the process of opportunity recognition, Gartner et al. (2003) found that in only about a third of new venture startup efforts did nascent entrepreneurs begin with an idea first, while they were more likely to desire to be in business (44%) or engage in startup activities with both the desire and an idea (22%). In an analysis of opportunities using an attributional framework, Gartner and Shaver (2002) found that nascent entrepreneurs offered interpretations for opportunities that were internal (stable and variable), that is, nascent entrepreneurs saw opportunities as originating from within, either as a product of their abilities (internal/stable attributions) or their effort (internal/variable attributions).

Matthews and Human (2000) found that nascent entrepreneurs who were more likely to prepare written business plans were less likely to have high growth expectations for their prospective new businesses. In addition, nascent entrepreneurs who perceived a high level of operational uncertainty (e.g., ability to control critical resources within the

firm) were less likely to have high growth expectations. Carter and Robb (2002) found that women nascent entrepreneurs were more risk averse and less likely to expect debt financing to capitalize their businesses, compared to male nascent entrepreneurs.

Finally, studies have been undertaken to ascertain and measure which startup efforts in the PSED are high technology based (Stearns and Allen, 2001) and to compare high technology and no technology nascent entrepreneurs to determine differences and commonalities in characteristics and start-up behaviors (Allen and Stearns, 2002). They found significant differences between the groups in: start-up behaviors, such as forming a team, applying for a patent, and completing a prototype; characteristics, such as the degree of technical knowledge and perceptions about the potential of the venture; and strategic intentions, such as growing the business and finding niches where customers have not been served.

For those interested in furthering entrepreneurship in the United States, support for research on the PSED will provide valuable evidence about how the process of business creation actually occurs.

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