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# LONGITUDINAL EMPLOYER - HOUSEHOLD DYNAMICS

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TECHNICAL PAPER NO. TP-2002-04

## Successor/Predecessor Firms

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Date : January 2002  
Prepared by : Kevin L. McKinney  
Contact : Ronald Prevost (Ronald.C.Prevost@census.gov)  
U.S. Census Bureau, LEHD Program  
FB 2138-3  
4700 Silver Hill Rd.  
Suitland, MD 20233 USA

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This document reports the results of research and analysis undertaken by the U.S. Census Bureau staff. It has undergone a Census Bureau review more limited in scope than that given to official Census Bureau publications, and is released to inform interested parties of ongoing research and to encourage discussion of work in progress. This research is a part of the U.S. Census Bureau's Longitudinal Employer-Household Dynamics Program (LEHD), which is partially supported by the National Science Foundation Grant SES-9978093 to Cornell University (Cornell Institute for Social and Economic Research), the National Institute on Aging, and the Alfred P. Sloan Foundation. The views expressed herein are attributable only to the author(s) and do not represent the views of the U.S. Census Bureau, its program sponsors or data providers. Some or all of the data used in this paper are confidential data from the LEHD Program. The U.S. Census Bureau is preparing to support external researchers' use of these data; please contact Ronald Prevost (Ronald.C.Prevost@census.gov), U.S. Census Bureau, LEHD Project, FB 2138-3, 4700 Silver Hill Rd., Suitland, MD 20233, USA.

# Executive Summary

The goal of this research was to investigate the value added from using worker flows to identify the spurious births and deaths of businesses. We identify four types of “at risk” businesses from ES202 using the successor/predecessor flag and mimic the same categories using UI wage record data. We use two critical decision rules in the analysis: a successor firm has to have at least 80% of employment coming from the donor firm and (in two of the four categories) at least 5 employees have to come from the donor firm. We examine the sensitivity of the categories based on the percentage definition, and find that the results stay very similar, with the exception of the identification of the pure successor. We examine the sensitivity based on the count threshold, and find that there are enormous differences, particularly with identifying spinoff businesses.

When we compare the UI and ES202 data, we have the following key results

- The ES202 data show 16,891 succ/pred. UI flows confirm 42% of these (7,187)
- UI data suggest a further 51,004 flows that bear further investigation
- Of the 7,187 that confirm succ/pred relationship, UI and ES202 agree on succ firm 65% of time (4,657)
- In general the UI and the 202 agree on the timing of the link. About 86% of the link information on the UI and the 202 agree within +-2 quarters.

## 1. Introduction

This report represents the initial pilot research using Florida ES202 data from 1993:1 to 1998:3. Florida represents a particularly interesting state, because there are many small businesses, and the temporary help/personnel supply industry is very important relative to other states.

Florida had 299,655 business at the beginning of the period; 326,532 by the end. We focus on the subset that has 5 or more workers: these accounted for about 33% of the businesses in each of the quarters. The worker flows accounted for by these businesses average about 1.5 million per quarter.

The report is organized as follows. We first establish the basic facts for ES202 data. We then discuss and present a similar set of facts for UI data. We examine the sensitivity of the UI flow analysis to the set of criteria we use, and follow this by a comparison of the UI and ES202 results. We conclude by discussing the next steps for future research.

## 2. ES202 data

In this report we identify four types of "at risk" businesses from ES202 data with successor/predecessor flag.

If the firm dies then we create two categories:

1. The designated successor firm has at least 80% of the employment total evident in the donor firm
2. The designated successor firm has less than 80% of the employment total in the donor firm

If the firm remains active, we create two more categories

3. The designated successor firm has at least 80% of the employment total evident in the donor firm
4. The designated successor firm has less than 80% of the employment total in the donor firm

**Table 1: ES202 Categories by Firm Size**

<b>Category</b>	<b>1 to 5</b>	<b>5 to 10</b>	<b>11 to 25</b>	<b>26 to 50</b>	<b>51+</b>	<b>Total</b>
<b>1</b>	57.7%	62.7%	60.3%	55.6%	38.7%	<b>56.7%</b>
<b>2</b>	15.3%	18.5%	20.8%	24.8%	43.1%	<b>20.0%</b>
<b>3</b>	0.6%	1.7%	2.8%	3.5%	2.0%	<b>1.3%</b>
<b>4</b>	0.2%	0.3%	0.9%	1.2%	1.7%	<b>0.5%</b>
<b>Total</b>	<b>27,522</b>	<b>7,990</b>	<b>5,946</b>	<b>2,492</b>	<b>5,302</b>	<b>49,252</b>

We summarize the size distribution of businesses that have successor/predecessor flags of each different type in Table 1. Roughly 15% of Florida businesses have a successor/predecessor flag, but the vast majority of these are small firms. There are substantial differences in the type of successor/predecessor activity across firm size –

notably, the larger the firm, the less likely it is that there will be a "pure" successor/predecessor transfer of EIN (category 1 in the table).

## 2. UI Data

We mimic the ES202 classifications by setting up four categories.

If the firm dies then we create two categories:

1. 80+% of workers go to one other EIN
2. Fewer than 80%, but at least 5, go to another EIN

If the firm is still active, then we create two more categories

3. 80+% of workers go to another EIN
4. Fewer than 80%, but at least 5, go to another EIN

It is worth noting that since there is no predecessor successor flag, there are many more businesses to examine and this is evident from an examination of Table 2. The number of EINs with more than 5 employees to be examined using ES202 data was 21,730; there are almost 300,000 UI defined EINs.

<b>Category</b>	<b>5 to 10</b>	<b>11 to 25</b>	<b>26 to 50</b>	<b>51+</b>	<b>Total</b>
<b>1</b>	72.4%	47.6%	26.2%	2.1%	<b>10.2%</b>
<b>2</b>	15.8%	25.7%	23.4%	12.3%	<b>14.1%</b>
<b>3</b>	2.0%	1.1%	0.4%	0.1%	<b>0.3%</b>
<b>4</b>	9.8%	25.6%	49.9%	85.5%	<b>75.4%</b>
<b>Total</b>	<b>13,851</b>	<b>22,635</b>	<b>17,412</b>	<b>245,390</b>	<b>299,288</b>

Of these, however, the vast majority is accounted for by the last category – where there is a potential for identifying spinoffs. This is particularly true for the largest size class. If we focus attention on the firms that have died - classes 1 and 2 - the number to be examined drops to just over 72,000.

It is worth noting that the five employee minimum is quite a strong one: of all the EINs who had at least 2 departing workers who ended up at the same destination EIN, only 5.7% had five or more workers at the same destination.

### 3. Sensitivity Analysis

We perform three types of sensitivity analysis. We examine the sensitivity of the results to the choice of the percentage threshold; to the choice of the count of the number of workers; and to the size class of businesses.

#### *a) Analysis of the Percentage Threshold*

We tested the effect of changing the percentage of workers who left the donor firm and ended up at the destination firm for 1998:2 and 1994:2 and report the results in Tables 3a and 3b respectively.

<b>Category</b>	<b>&gt;60%</b>	<b>&gt;70%</b>	<b>&gt;80%</b>	<b>&gt;90%</b>
1	1,317	1,238	1,108	835
2	1,606	1,654	1,762	2,000
3	73	56	38	27
4	13,435	13,447	13,464	13,475
<b>Total</b>	<b>16,431</b>	<b>16,395</b>	<b>16,372</b>	<b>16,337</b>

<b>Category</b>	<b>&gt;60%</b>	<b>&gt;70%</b>	<b>&gt;80%</b>	<b>&gt;90%</b>
1	1,023	967	869	636
2	1,370	1,403	1,481	1,670
3	64	53	32	15
4	10,184	10,193	10,211	10,225
<b>Total</b>	<b>12,641</b>	<b>12,616</b>	<b>12,593</b>	<b>12,546</b>

Briefly, the results show remarkable resilience to the choice of percentage. The category most likely to be affected – the "pure" successor/predecessor link, category 1, remains at around the same level until the threshold goes above 90%. In addition, this resilience appears to be quite similar over time.

#### *b) Analysis of Count Threshold*

<b>Category</b>	<b>&gt;5</b>	<b>&gt;10</b>	<b>&gt;25</b>
1	1,108	1,108	1,108
2	1,762	743	237
3	38	38	38
4	13,464	5,077	1,375
<b>Total</b>	<b>16,372</b>	<b>6,966</b>	<b>2,758</b>

We also examine the sensitivity of the results when the minimum number of workers that move from the donor to the destination firm is varied (and the proportion is still below 80%), affecting categories 2 and 4, and report the results in Tables 4a and 4b. It is clear

<b>Category</b>	<b>&gt;5</b>	<b>&gt;10</b>	<b>&gt;25</b>
1	869	869	869
2	1,481	697	252
3	32	32	32
4	10,211	3,946	1,073
<b>Total</b>	<b>12,593</b>	<b>5,544</b>	<b>2,226</b>

from both the tables that implementing a different numerical threshold has quite dramatic effects on the proportion of "at-risk" EIN's.

*c) Analysis of Size Class*

The final arbitrary definition was to consider only businesses with more than 5 employees. We therefore examined the impact of choosing different size thresholds on each of the four successor/predecessor categories, and report the results in Tables 5a and 5b.

<b>Category</b>	<b>&gt;5</b>	<b>&gt;10</b>	<b>&gt;25</b>
1	1,108	714	332
2	1,762	1,716	1,577
3	38	22	6
4	13,464	13,350	13,034
<b>Total</b>	<b>16,372</b>	<b>15,802</b>	<b>14,949</b>

<b>Category</b>	<b>&gt;5</b>	<b>&gt;10</b>	<b>&gt;25</b>
1	869	503	228
2	1,481	1,431	1,314
3	32	17	7
4	10,211	10,086	9,649
<b>Total</b>	<b>12,593</b>	<b>12,037</b>	<b>11,198</b>

Here again, the decision to go with larger businesses means that there are fewer "pure" successor/predecessor firms. The other categories are not sensitive to this definition, and the patterns are quite robust over the two time periods.

#### **4. Results**

In examining the results, we choose to compare the UI and 202 link records for categories 1 and 2 to simplify the analysis. All of the firms have died by period t and we do not have to worry about firms that are still alive, but we do know that an establishment changed ownership. We ignore ES202 businesses with 5 or fewer employees.

In our analysis, the ES202 data showed 16,891 successor/predecessor relationships over the time period. UI flows confirmed 7,187 of these - 42% of these. UI data suggest a further 51,004 potential links that bear further investigation.

Of the 7,187 that confirm a successor predecessor relationship, UI and ES202 agree on the successor firm in 4,657 of the cases, or 65% of time.

In general the UI and the 202 agree on the timing of the link. About 86% of the link information on the UI and the 202 agree within +/-2 quarters

### **5. Next Steps**

This analysis has demonstrated the feasibility and potential use of UI flow analysis in identifying successor/predecessor relationships. Many unanswered questions remain, however. In particular, state input is needed on threshold definitions, we will expand the analysis into different industries (particularly temporary help), and identify what kind of indicators would be useful to return to the states.