

Table 1: Transition Matrix, All Year-Pairs

Base Year Occupation	Year 2 Occupation							
	Teamster	Truck Driver	Blacksmith	Bus Driver	Taxi Driver	Expressman	Other	Not in Labor Force
Teamster	0.131	0.033	0.003	0.000	0.000	0.003	0.754	0.075
Truck Driver	0.006	0.221	0.001	0.004	0.001	0.001	0.700	0.066
Blacksmith	0.003	0.004	0.450	0.000	0.000	0.000	0.457	0.086
Bus Driver	0.005	0.059	0.001	0.252	0.005	0.000	0.606	0.072
Taxi Driver	0.004	0.054	0.001	0.009	0.087	0.000	0.756	0.088
Expressman	0.043	0.039	0.001	0.000	0.001	0.118	0.716	0.082
Other	0.003	0.007	0.002	0.001	0.000	0.000	0.842	0.145
Not in Labor Force	0.000	0.001	0.000	0.000	0.000	0.000	0.179	0.819

Notes: Rows are census base year (year 1) occupations. Columns are occupations in the subsequent census year. Coefficients represent the percentage of workers in an occupation in a given census year who were working in the specified column occupation in the subsequent census year. For example, 13.1% of teamsters were working as a teamster in the subsequent census year.

Table 1 displays into which occupations workers were most likely to move. I find it noteworthy that blacksmiths experience significantly less occupation mobility compared to other occupations listed here. Perhaps this is because blacksmithing is a higher paying skilled job compared to the other listed occupations. 84.2% of people whose occupation was “other” in the first year were also in the “other” category in the second census year. I believe that this simply reflects the fact that the “other” category is a lot larger than the teamster-related occupations we see here. This also explains why transition into the “other” category from teamster-related occupations is so high.

Just 8.7% of taxi drivers remain in the same occupation across census years. Bus drivers and truck drivers see much higher rates of occupation consistency, with 25.2% of bus drivers in one census year still working as a bus driver in the next census year. The corresponding rate for truck drivers is 22.1%.

Another thing to note is that, on average, 13.1% of teamsters are still teamsters in the subsequent census year. 3.3% of teamsters transition into truck driving between each census year. This is much higher than transition rates into other teamster-related occupations (generally less than 0.5%). Additionally, 5.9% of bus drivers transition into truck driving in a subsequent census year. I wonder to what extent this is due to differences in population size (i.e. there are many more truck drivers than bus drivers or teamsters).

Table 2: Transition Matrix, Each Year-Pair Separately

Base Year Occupation	Year 2 Occupation							
	Teamster	Truck Driver	Blacksmith	Bus Driver	Taxi Driver	Expressman	Other	Not in Labor Force
Teamster								
1900	0.177	0.004	0.005	0.000	0.000	0.004	0.757	0.053
1910	0.134	0.021	0.004	0.000	0.000	0.004	0.775	0.062
1920	0.094	0.064	0.002	0.001	0.001	0.002	0.760	0.077
1930	0.058	0.090	0.002	0.001	0.001	0.001	0.648	0.200
Truck Driver								
1900	0.058	0.076	0.003	0.000	0.000	0.007	0.791	0.065
1910	0.028	0.069	0.003	0.000	0.000	0.005	0.811	0.083
1920	0.008	0.146	0.002	0.002	0.001	0.002	0.793	0.046
1930	0.003	0.250	0.001	0.004	0.002	0.001	0.670	0.070
Blacksmith								
1900	0.005	0.001	0.510	0.000	0.000	0.000	0.423	0.060
1910	0.004	0.002	0.460	0.000	0.000	0.000	0.466	0.068
1920	0.002	0.007	0.390	0.000	0.000	0.000	0.517	0.084
1930	0.000	0.006	0.412	0.001	0.000	0.000	0.407	0.173
Bus Driver								
1900	0.079	0.002	0.002	0.013	0.006	0.006	0.841	0.052
1910	0.044	0.011	0.000	0.000	0.007	0.004	0.857	0.077
1920	0.004	0.038	0.006	0.025	0.004	0.002	0.831	0.090
1930	0.000	0.064	0.001	0.281	0.005	0.000	0.577	0.072
Other								
1900	0.008	0.001	0.003	0.000	0.000	0.000	0.874	0.113
1910	0.005	0.002	0.002	0.000	0.000	0.000	0.842	0.147
1920	0.002	0.008	0.001	0.000	0.000	0.000	0.861	0.127
1930	0.000	0.014	0.001	0.001	0.001	0.000	0.808	0.175

Notes: Rows are census base year (year 1) occupations. Columns are occupations in the subsequent census year. Coefficients represent the percentage of workers in an occupation in the specified census year who were working in the specified column occupation in the subsequent census year.

Table 2 provides a breakdown of transition rates for each pair of adjacent census years. To save space, not all base year occupations are listed. One of the most interesting things to note is the change in rates over time. The share of blacksmiths who remained blacksmiths largely fell over time, and the share of blacksmiths who moved into the “other” category largely increased over the forty years. Bus drivers in 1930 were more likely to be bus drivers in the next census year than were bus drivers in 1920. The proportion of truck drivers who remained truck drivers increased over time from 7.6% in 1900-1910 to 25% in 1930-1940. The share of teamsters who remained teamsters decreased from 17.7% in 1900-1910 to 5.8% in 1930-1940. The share of teamsters who became truck drivers increased from 0.4% in 1900-1910 to 9% in 1930-1940. Most of this increase happened from 1910 to 1930, when the fraction of teamsters who became truck drivers jumped from 2.1% to 6.4%.

Table 3: Transition Matrix, Changes in Transition Rates Between Adjacent Pairs of Census Years

Base Year Occupation	Year 2 Occupation							
	Teamster	Truck Driver	Blacksmith	Bus Driver	Taxi Driver	Expressman	Other	Not in Labor Force
Teamster								
1910	-0.043	0.017	-0.001	0.000	0.000	0.000	0.018	0.009
1920	-0.04	0.043	-0.002	0.001	0.001	-0.002	-0.015	0.015
1930	-0.036	0.026	0.000	0.000	0.000	-0.001	-0.112	0.123
Truck Driver								
1910	-0.03	-0.007	0.000	0.000	0.000	-0.002	0.02	0.018
1920	-0.02	0.077	-0.001	0.002	0.001	-0.003	-0.018	-0.037
1930	-0.005	0.104	-0.001	0.002	0.001	-0.001	-0.123	0.024
Blacksmith								
1910	-0.001	0.001	-0.05	0.000	0.000	0.000	0.043	0.008
1920	-0.002	0.005	-0.07	0.000	0.000	0.000	0.051	0.016
1930	-0.002	-0.001	0.022	0.001	0.000	0.000	-0.11	0.089
Bus Driver								
1910	-0.035	0.009	-0.002	-0.013	0.001	-0.002	0.016	0.025
1920	-0.04	0.027	0.006	0.025	-0.003	-0.002	-0.026	0.013
1930	-0.004	0.026	-0.005	0.256	0.001	-0.002	-0.254	-0.018
Other								
1910	-0.003	0.001	-0.001	0.000	0.000	0.000	-0.032	0.034
1920	-0.003	0.006	-0.001	0.000	0.000	0.000	0.019	-0.02
1930	-0.002	0.006	0.000	0.001	0.001	0.000	-0.053	0.048

Notes: Rows are census base year (year 1) occupations. Columns are occupations in the subsequent census year. Coefficients represent the percentage point change in the transition rates from one pair of census years to the next. For example, the fraction of blacksmiths in 1910 who remained blacksmiths in 1920 decreased by 7 percentage points compared to the 1900-1910 transition rate.

Table 3 lists changes in transition rates between adjacent pairs of census years. I initially created this table because I was interested in seeing which transitions became stronger (or weaker) over time. The transition between “blacksmith” and “blacksmith” became weaker over time, while the transition between “blacksmith” and “other” became stronger over time. This reflects the decline of the blacksmithing industry. Bus driving from 1930 to 1940 became much more attractive, as evidenced by the large jump increase in the share of bus drivers who remained bus drivers. The share of bus drivers, teamsters, and truck drivers who were truck drivers in a subsequent census year increased over time. This increase reflects the rapid growth in the trucking industry, especially from 1920 to 1930.

Table 4: Changes in City Level Occupation, First Differences Approach

	Truck Driver	Blacksmith	Bus Driver	Taxi Driver	Expressman	Other	Not in Labor Force
Decrease in Number of Teamsters	0.1948** (0.0015)	-0.1044** (0.0004)	0.0066** (0.0001)	0.0037** (0.0001)	-0.0410** (0.0001)	-1.2474** (0.0144)	2.1877** (0.0135)
Change in Population	0.0033** (0.0000)	0.0017** (0.0000)	0.0001** (0.0000)	0.0001** (0.0000)	0.0003** (0.0000)	0.6109** (0.0001)	0.3836** (0.0001)
Log Base Year Population	12.6207** (0.4986)	-1.8596** (0.1301)	1.0499** (0.0284)	0.8331** (0.0358)	-0.7895** (0.0432)	-108.9865** (4.8668)	97.1321** (4.5775)
Male (% of Population)	14.9966 (18.7480)	-18.8022** (4.8925)	-1.3065 (1.0683)	2.9131* (1.3469)	6.4087** (1.6231)	1043.8845** (183.0113)	-1048.094** (172.1309)
Working Males 16-60 (% of Population)	71.7183** (21.9728)	-2.2506 (5.7340)	4.4199** (1.2521)	1.6178 (1.5786)	-2.8283 (1.9023)	-1019.315** (214.4903)	946.6383** (201.7384)
Labor Force Participation Rate	50.7606** (14.8757)	3.2989 (3.8820)	4.6024** (0.8477)	3.6102** (1.0687)	-2.4349 (1.2879)	-701.4166** (145.2113)	641.5795** (136.5782)
Homeowners (% of Population)	60.5396** (3.7998)	-22.4003** (0.9916)	3.0650** (0.2165)	2.9731** (0.2730)	2.6124** (0.3290)	-359.9876** (37.0923)	313.1979** (34.8871)
N	88240	88240	88240	88240	88240	88240	88240

Notes: Columns are outcome variables, and rows are regressors. Unit of analysis is cities in U.S. census years 1900-1930 which have a crosswalk match to the subsequent census year. *Decrease in Number of Teamsters* refers to the difference between the number of teamsters in a given city in census year 1 and the number of teamsters in the same city in the subsequent census. *Change in Population* is the difference between city population in census year 2 and city population in the previous census. *Blacksmith* refers to the difference between the number of blacksmiths in a city in census year 2 and the number of blacksmiths in the same city in the previous census year. Models include year and state fixed effects. Standard errors are in parentheses. ** denotes significance at the 5% level and * at the 10% level.

Table 4 shows the correlation between teamster job losses and job losses/gains for other occupations. I like this regression because I think that it is a lot easier to interpret than the other regressions.

If a city loses 100 teamsters from one census year to the next, the city will also lose roughly 10 blacksmiths, 4 expressmen, and 124 workers in non-teamster-related occupations. However, the city should also gain 19 truck drivers, 1 bus driver, and 219 people who are either unemployed or not in the labor force. Each individual in a city is either a teamster or one of the categories listed as the columns of Table 4. So, we expect that a city that loses 100 teamsters should gain about 100 people in other occupations. Thus, the sum of the regression coefficients in the Decrease in the Number of Teamsters row should sum to a number close to one, which they do.

I think an important thing to note is that this analysis does not tell us which occupations teamsters moved into when they were displaced by automobiles. Instead, it tells us how the structure of the labor force changed when teamsters were displaced. Some of the displaced teamsters certainly moved into the occupations in Table 4, but this regression also captures changes between other occupations. Is there a better specification that can tell us which occupations teamsters moved to?

Table 5: Ten-year occupation outcomes for teamsters

	Teamster	Truck Driver	Black-smith	Bus Driver	Taxi Driver	Express-man	Other	Not in Labor Force
% Decrease in Teamsters	-0.609** (0.206)	0.028 (0.021)	0.006 (0.010)	-0.001 (0.003)	-0.001 (0.002)	0.003 (0.006)	0.503** (0.178)	0.067 (0.036)
Log Base Year City Population	0.822** (0.051)	0.322** (0.032)	-0.026** (0.009)	-0.011** (0.004)	-0.002 (0.004)	0.059** (0.008)	-1.298** (0.067)	0.132** (0.038)
Female	-11.405** (0.138)	-3.017** (0.074)	-0.322** (0.022)	-0.025** (0.004)	-0.036** (0.005)	-0.303** (0.012)	-38.315** (0.554)	53.303** (0.546)
Base Year Home Ownership	1.011** (0.095)	0.225** (0.050)	0.046** (0.017)	-0.000 (0.005)	0.002 (0.006)	0.114** (0.016)	-1.908** (0.118)	0.498** (0.066)
N	580730	580730	580730	580730	580730	580730	580730	580730

Notes: Columns are outcome variables expressed in percentage point probabilities that a teamster in the base census year is a given occupation in the subsequent census year. Rows are regressors. Unit of analysis is individual teamsters in U.S. census years 1900-1930 who are linked to their subsequent census record. *% Decrease in Teamsters* refers to the percentage decrease in teamsters as a percentage of the labor force between census years. Thus, a 10% decrease in the fraction of teamsters in the labor force predicts a 0.06 percentage point decrease in the probability that a teamster becomes a truck driver. *Female* is an indicator for whether the teamster is female. *Base Year Home Ownership* indicates whether the teamster owned his home in the base census year. All models include birth year fixed effects and base year by county fixed effects. Regressions also include controls for various occupations as a fraction of the labor force in the base year. Robust standard errors in parentheses. ** denotes significance at the 5% level, and * at the 10% level.

Regression Table 5 identifies the effect of local automobile adoption on 10-year occupation outcomes for teamsters. We expect that local motor vehicle use is highly correlated with the fraction of teamsters as a percentage of the labor force. Hence, we use the percent decrease in teamsters as a fraction of the labor force as a proxy for local motor vehicle adoption.

We find that a 10% decrease in teamsters as a fraction of the labor force from one census year to the next is associated with a 0.06 percentage point decrease in the probability that a teamster in the base census year is still a teamster in the subsequent census year. Additionally, a 10% decrease in the percentage of the labor force working as teamsters predicts a 0.0503 percentage point increase in the probability that a teamster moves out of the ground transportation industry altogether.

Table 6: Robustness Check, Breakdown by Year

Occupation	Teamster				Other Occupation			
Base Year	1900	1910	1920	1930	1900	1910	1920	1930
% Decrease in Teamsters	-0.411* (0.169)	-1.096** (0.217)	-0.243 (0.152)	-5.247** (0.618)	0.456* (0.195)	0.902** (0.215)	0.153 (0.107)	4.358** (0.542)
Log Base Year City Population	2.225** (0.132)	0.771** (0.092)	0.454** (0.091)	-0.029 (0.124)	-2.298** (0.147)	-1.057** (0.112)	-1.182** (0.136)	-0.967** (0.232)
Female	-14.250** (0.276)	-11.757** (0.213)	-8.241** (0.217)	-5.414** (0.337)	-40.608** (0.919)	-40.721** (0.912)	-36.229** (1.212)	-23.380** (2.081)
Base Year Home Ownership	0.898** (0.190)	1.020** (0.164)	1.063** (0.168)	1.111** (0.218)	-2.073** (0.210)	-2.004** (0.198)	-1.937** (0.239)	-0.882* (0.416)
N	184174	201543	141310	53703	184174	201543	141310	53703

Notes: All models include the same controls as the regressions in Table 5. *Other Occupation* refers to teamsters in the base census year who were not teamsters, truck drivers, blacksmiths, etc., but were still in the labor force in the following census year. Robust standard errors in parentheses. ** denotes significance at the 5% level and * at the 10% level.

Table 6 breaks down occupation outcomes for teamsters by base census year. The percent decrease in teamsters has the largest effect on teamsters for the years 1930-1940. A 10% decrease in the percentage of the labor force working as teamsters predicts a 0.4358 percentage point increase in the probability that the teamster in 1930 is working in another occupation in 1940.

Table 7: Robustness Check, Breakdown by Age

Occupation	Teamster				Other Occupation			
Age in Base Year	16-25	26-35	36-45	46-55	16-25	26-35	36-45	46-55
% Decrease in Teamsters	-0.209 (0.164)	-0.678** (0.169)	-0.968* (0.446)	-0.496 (0.370)	0.130 (0.210)	0.370* (0.160)	0.891* (0.421)	0.496 (0.414)
Log Base Year City Population	0.499** (0.090)	0.891** (0.098)	0.992** (0.125)	0.787** (0.161)	-0.944** (0.129)	-1.316** (0.124)	-1.546** (0.151)	-1.352** (0.202)
Female	-8.142** (0.261)	-11.899** (0.304)	-15.768** (0.413)	-17.512** (0.536)	-43.193** (1.099)	-39.059** (1.237)	-41.000** (1.325)	-41.217** (1.608)
Base Year Home Ownership	-0.209 (0.168)	0.987** (0.189)	1.360** (0.225)	1.625** (0.288)	0.433 (0.222)	-1.298** (0.230)	-2.348** (0.263)	-4.005** (0.348)
N	139285	165659	133876	87220	139285	165659	133876	87220

Notes: All models include the same controls as regressions in Table 5. Robust standard errors in parentheses. ** denotes significance at the 5% level, and * at the 10% level.