

Appendix to “Employment among Patients Starting Dialysis in the United States”

Appendix 1: Cleaning Covariates.

In some instances, the Medical Evidence Report has values for continuous variables that are unrealistic. Prior to conducting multiple imputation, we made several adjustments to reported variables. For serum hemoglobin, albumin, and estimated glomerular filtration rate (eGFR), we changed values with “0” to missing. For serum hemoglobin, we set a minimum of 2 g/dl and a maximum of 20 g/dl. For serum albumin, we set a maximum of 6 g/dl. For eGFR, we set a maximum of 100 ml/min/1.73m².

Supplemental Table 1. Linear Probability Model Examining the Probability of Employment 6-months Prior to ESRD.

Covariates	Calendar Year & Patient Demographics		+ Patient Comorbidities		+ Regional Unemployment	
	Est (%) [*]	95% CI (%)	Est (%) [*]	95% CI (%)	Est (%) [*]	95% CI (%)
Change in Probability from 1997-2001 to:						
2002-2007 [†]	-0.6	[-1.0,-0.3]	0.6	[0.3,0.9]	1.0	[0.7,1.3]
2008-2013 [‡]	0.7	[0.4,1.1]	2.6	[2.3,3.0]	6.6	[6.2,7.0]
Calendar Year						
Year						
1996		Reference		Reference		Reference
1997	1.5	[0.6,2.3]	1.7	[0.9,2.5]	1.2	[0.4,2.1]
1998	3.0	[2.2,3.9]	3.2	[2.4,4.0]	2.2	[1.4,3.0]
1999	2.4	[1.6,3.2]	2.8	[2.0,3.6]	1.4	[0.6,2.3]
2000	2.4	[1.6,3.3]	3.1	[2.3,3.9]	1.3	[0.5,2.2]
2001	2.7	[1.8,3.5]	3.5	[2.7,4.3]	2.5	[1.7,3.3]
2002	-0.1	[-0.9,0.8]	0.9	[0.1,1.7]	1.2	[0.4,2.0]
2003	-2.2	[-3.0,-1.3]	-1.0	[-1.8,-0.2]	-0.5	[-1.3,0.3]
2004	-1.2	[-2.0,-0.4]	0.2	[-0.6,1.0]	0.2	[-0.6,1.0]
2005	2.2	[1.4,3.0]	4.0	[3.2,4.8]	3.0	[2.2,3.8]
2006	4.6	[3.8,5.5]	6.7	[5.9,7.5]	5.0	[4.3,5.8]
2007	4.8	[3.9,5.6]	6.9	[6.1,7.7]	5.8	[5.0,6.6]
2008	4.6	[3.8,5.4]	7.0	[6.2,7.8]	7.2	[6.4,8.0]
2009	3.8	[3.0,4.6]	6.2	[5.4,7.0]	10.4	[9.6,11.2]
2010	2.2	[1.4,3.0]	4.8	[4.0,5.5]	9.4	[8.6,10.3]
2011	2.2	[1.3,3.0]	4.5	[3.7,5.3]	8.5	[7.7,9.3]
2012	3.1	[2.2,3.9]	4.9	[4.1,5.7]	7.9	[7.1,8.7]
2013	0.7	[-0.1,1.5]	2.7	[1.9,3.5]	4.9	[4.1,5.7]
Demographics and Socioeconomic status						
Age group						
18-28		Reference		Reference		Reference
29-38	-4.6	[-5.2,-4.0]	-2.3	[-2.8,-1.7]	-2.2	[-2.8,-1.7]
39-48	-8.2	[-8.7,-7.7]	-3.9	[-4.4,-3.4]	-3.8	[-4.3,-3.3]
49-54	-13.0	[-13.5,-12.5]	-7.1	[-7.6,-6.6]	-7.0	[-7.5,-6.5]
Female	-8.5	[-8.8,-8.2]	-8.7	[-9.0,-8.5]	-8.7	[-9.0,-8.5]
Race						
White		Reference		Reference		Reference
Black	-7.0	[-7.2,-6.7]	-7.8	[-8.1,-7.5]	-7.6	[-7.9,-7.3]
Other	-0.9	[-1.5,-0.4]	-1.2	[-1.7,-0.6]	-0.8	[-1.4,-0.3]
Hispanic ethnicity	-8.5	[-8.9,-8.2]	-8.6	[-9.0,-8.2]	-7.8	[-8.2,-7.4]
Disability	-31.8	[-32.0,-31.5]	-28.4	[-28.7,-28.1]	-28.5	[-28.9,-28.2]
County level median household Income						
1st(bottom) 1/5	-8.7	[-9.1,-8.2]	-6.7	[-7.1,-6.3]	-3.8	[-4.3,-3.4]
2nd 1/5	-5.4	[-5.8,-5.0]	-3.9	[-4.3,-3.5]	-2.6	[-3.0,-2.2]
3rd 1/5	-2.7	[-3.1,-2.3]	-1.5	[-1.9,-1.1]	-0.8	[-1.2,-0.4]
4th 1/5	-3.0	[-3.4,-2.6]	-2.5	[-2.9,-2.1]	-1.2	[-1.6,-0.8]
5th(top) 1/5		Reference		Reference		Reference
Comorbidities						
Diabetes			-7.3	[-7.5,-7.0]	-7.3	[-7.6,-7.0]
Coronary heart disease			-1.9	[-2.3,-1.4]	-2.0	[-2.4,-1.5]
Cancer			-1.2	[-2.0,-0.3]	-1.2	[-2.0,-0.4]
Heart failure			-6.1	[-6.5,-5.8]	-6.1	[-6.4,-5.7]
Lung disease			-7.0	[-7.8,-6.3]	-7.0	[-7.8,-6.3]
Cerebrovascular disease			-8.7	[-9.3,-8.1]	-8.7	[-9.3,-8.2]
Peripheral vascular disease			-4.6	[-5.1,-4.1]	-4.6	[-5.1,-4.1]
Smokes			-4.9	[-5.4,-4.4]	-5.0	[-5.5,-4.6]
Drug or alcohol abuse			-17.9	[-18.5,-17.3]	-17.8	[-18.4,-17.2]
Immobility			-9.8	[-10.6,-9.0]	-9.7	[-10.4,-8.9]
Hemoglobin (g/dL)						

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less than 9	-2.1	[-2.5,-1.6]	-2.0	[-2.4,-1.6]
9-<11	-0.9	[-1.3,-0.5]	-0.9	[-1.2,-0.5]
11 or higher	Reference		Reference	
Serum albumin (g/dL)				
less than 3	-7.6	[-8.0,-7.3]	-7.6	[-8.0,-7.3]
3-<3.5	-4.1	[-4.5,-3.7]	-4.1	[-4.5,-3.8]
3.5 or higher	Reference		Reference	
Body Mass Index (kg/m ²)				
less than 30	Reference		Reference	
30 or higher	1.9	[1.6,2.2]	1.9	[1.6,2.1]
eGFR (1.73ml/min/m ²)	-0.6	[-0.6,-0.5]	-0.6	[-0.6,-0.5]
Unemployment rate				
County level unemployment rate			-1.1	[-1.2,-1.0]

* Percent change in the absolute probability of employment associated with a 1 unit increase in a covariate. †Change in average of the adjusted probabilities of employment from the first 6 years (1996-2001) to the middle 6 years (2002-2007). ‡ Change in average of the adjusted probabilities of employment from the first 6 years (1996-2001) to the last 6 years (2008-2013). eGFR is estimated glomerular filtration rate.

Using a Poisson Regression model (with identical covariates), the change in relative risk of employment between the first 6 years (1996-2001) and the middle 6 years (2002-2007) was +2.4% (p<0.001); the change in relative risk of employment between the first 6 years (1996-2001) and the last 6 years (2008-2013) was +20.5% (p<0.001).

Supplemental Table 2. Linear Probability Model Examining the Probability of Employment at the Onset of Dialysis among Patients Employed 6-months Prior to ESRD.

Covariates	Calendar Year & Patient Demographics		+ Patient Comorbidities		+ Regional Unemployment	
	Est (%) [*]	95% CI (%)	Est (%) [*]	95% CI (%)	Est (%) [*]	95% CI (%)
Change in Probability from 1997-2001 to:						
2002-2007 [†]	1.0	[0.5,1.6]	1.3	[0.8,1.9]	1.6	[1.1,2.2]
2008-2013 [‡]	3.1	[2.5,3.6]	3.3	[2.7,3.9]	5.6	[4.9,6.3]
Calendar Year						
Year						
1996		Reference		Reference		Reference
1997	2.3	[0.8,3.8]	2.2	[0.7,3.6]	1.9	[0.4,3.4]
1998	1.8	[0.4,3.3]	1.7	[0.2,3.1]	1.1	[-0.3,2.5]
1999	2.7	[1.3,4.1]	2.8	[1.4,4.2]	2.1	[0.6,3.5]
2000	1.3	[-0.1,2.8]	1.5	[0.1,2.9]	0.5	[-0.9,2.0]
2001	1.8	[0.4,3.2]	1.9	[0.5,3.3]	1.5	[0.1,2.9]
2002	2.2	[0.7,3.6]	2.5	[1.0,3.9]	2.7	[1.3,4.2]
2003	1.4	[-0.1,2.9]	1.5	[0.0,2.9]	1.9	[0.4,3.3]
2004	1.2	[-0.3,2.7]	1.5	[0.1,2.9]	1.6	[0.1,3.0]
2005	3.2	[1.8,4.6]	3.7	[2.3,5.1]	3.3	[1.8,4.7]
2006	3.8	[2.4,5.2]	4.2	[2.8,5.6]	3.4	[2.0,4.8]
2007	4.3	[2.9,5.7]	4.7	[3.3,6.1]	4.2	[2.8,5.6]
2008	3.9	[2.5,5.3]	4.5	[3.1,5.8]	4.7	[3.3,6.1]
2009	2.7	[1.3,4.1]	3.2	[1.8,4.6]	5.6	[4.2,7.1]
2010	2.4	[1.0,3.9]	2.9	[1.5,4.3]	5.6	[4.1,7.1]
2011	3.1	[1.7,4.6]	3.4	[2.0,4.9]	5.8	[4.3,7.2]
2012	5.9	[4.4,7.3]	5.8	[4.3,7.2]	7.5	[6.0,9.0]
2013	10.3	[8.9,11.8]	10.2	[8.7,11.6]	11.4	[10.0,12.9]
Demographics and Socioeconomic status						
Age group						
18-28		Reference		Reference		Reference
29-38	-1.6	[-2.5,-0.8]	-1.7	[-2.5,-0.9]	-1.7	[-2.5,-0.9]
39-48	-0.5	[-1.3,0.2]	-0.1	[-0.9,0.7]	-0.1	[-0.9,0.7]
49-54	-1.1	[-1.9,-0.3]	-0.1	[-0.9,0.7]	0.0	[-0.9,0.8]
Female	-1.9	[-2.4,-1.4]	-2.2	[-2.7,-1.8]	-2.2	[-2.7,-1.8]
Race						
White		Reference		Reference		Reference
Black	-9.3	[-9.9,-8.8]	-8.9	[-9.4,-8.4]	-8.8	[-9.3,-8.3]
Other	-3.2	[-4.1,-2.3]	-2.7	[-3.6,-1.8]	-2.5	[-3.4,-1.6]
Hispanic ethnicity	-12.9	[-13.6,-12.2]	-12.8	[-13.4,-12.1]	-12.4	[-13.0,-11.7]
Disability	-7.9	[-8.9,-6.9]	-6.6	[-7.5,-5.6]	-6.7	[-7.6,-5.7]
County level median household Income						
1st(bottom) 1/5	-12.0	[-12.8,-11.3]	-10.9	[-11.7,-10.2]	-9.4	[-10.2,-8.6]
2nd 1/5	-7.2	[-8.0,-6.5]	-6.5	[-7.2,-5.8]	-5.8	[-6.5,-5.1]
3rd 1/5	-5.5	[-6.2,-4.8]	-4.8	[-5.5,-4.1]	-4.4	[-5.1,-3.7]
4th 1/5	-4.6	[-5.3,-3.9]	-4.5	[-5.1,-3.8]	-3.7	[-4.4,-3.0]
5th(top) 1/5		Reference		Reference		Reference
Comorbidities						
Diabetes			0.9	[0.4,1.4]	0.9	[0.4,1.4]
Coronary heart disease			-1.3	[-2.3,-0.3]	-1.4	[-2.3,-0.4]
Cancer			-7.2	[-8.7,-5.7]	-7.2	[-8.7,-5.7]
Heart failure			-6.0	[-6.8,-5.3]	-6.0	[-6.7,-5.3]
Lung disease			-5.4	[-7.2,-3.5]	-5.4	[-7.2,-3.6]
Cerebrovascular disease			-10.4	[-11.9,-8.9]	-10.5	[-11.9,-9.0]
Peripheral vascular disease			-0.4	[-1.6,0.8]	-0.4	[-1.6,0.8]
Smokes			-6.3	[-7.2,-5.4]	-6.4	[-7.3,-5.5]
Drug or alcohol abuse			-17.1	[-18.5,-15.7]	-17.1	[-18.5,-15.7]
Immobility			-20.7	[-23.0,-18.5]	-20.6	[-22.9,-18.4]
Hemoglobin (g/dL)						

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less than 9	-3.6	[-4.2,-2.9]	-3.5	[-4.2,-2.9]
9-<11	-1.5	[-2.1,-0.9]	-1.5	[-2.1,-0.9]
11 or higher	Reference		Reference	
Serum albumin (g/dL)				
less than 3	-11.6	[-12.3,-10.9]	-11.6	[-12.4,-10.9]
3-<3.5	-6.1	[-6.7,-5.5]	-6.1	[-6.7,-5.5]
3.5 or higher	Reference		Reference	
Body Mass Index (kg/m ²)				
less than 30	Reference		Reference	
30 or higher	3.6	[3.1,4.1]	3.6	[3.1,4.1]
eGFR (1.73ml/min/m ²)	-0.3	[-0.4,-0.3]	-0.3	[-0.4,-0.3]
Unemployment rate				
County level unemployment rate			-0.6	[-0.8,-0.5]

* Percent change in the absolute probability of employment associated with a 1 unit increase in a covariate. † Change in average of the adjusted probabilities of employment from the first 6 years (1996-2001) to the middle 6 years (2002-2007). ‡ Change in average of the adjusted probabilities of employment from the first 6 years (1996-2001) to the last 6 years (2008-2013). eGFR is estimated glomerular filtration rate.

Using a Poisson Regression model with identical covariates, the change in relative risk of employment between the first 6 years (1996-2001) and the middle 6 years (2002-2007) was +3.0% (p<0.001); the change in relative risk of employment between the first 6 years (1996-2001) and the last 6 years (2008-2013) was +10.1% (p<0.001).

Supplemental Table 3. Linear Probability Model Examining the Probability of Employment with Black Race as an Interaction.

Covariates	Est (%) [*]	95% CI (%)
Change in probability of interaction from 1997-2001 to:		
2002-2007 [†]	2.5	[1.9,3.1]
2008-2013 [‡]	3.4	[2.8,4.0]
Year		
1996	Reference	
1997	1.1	[0.2,2.1]
1998	1.0	[0.0,1.9]
1999	1.0	[0.1,2.0]
2000	0.2	[-0.8,1.1]
2001	0.7	[-0.2,1.7]
2002	1.0	[0.0,1.9]
2003	0.3	[-0.6,1.2]
2004	-0.2	[-1.1,0.7]
2005	1.1	[0.2,2.0]
2006	0.9	[0.0,1.8]
2007	1.6	[0.7,2.5]
2008	2.8	[1.9,3.7]
2009	4.8	[3.8,5.7]
2010	4.5	[3.5,5.4]
2011	3.5	[2.6,4.5]
2012	4.2	[3.3,5.1]
2013	4.6	[3.7,5.5]
Age group		
18-28	Reference	
29-38	-2.1	[-2.6,-1.6]
39-48	-2.3	[-2.8,-1.9]
49-54	-4.3	[-4.8,-3.9]
Female	-6.1	[-6.4,-5.9]
Race		
White	Reference	
Black	-11.2	[-12.3,-10.1]
Other	-1.6	[-2.1,-1.1]
Hispanic ethnicity	-9.6	[-10.0,-9.3]
Disability	-18.5	[-18.8,-18.2]
County level median household Income		
1st(bottom) 1/5	-6.9	[-7.3,-6.5]
2nd 1/5	-5.1	[-5.5,-4.7]
3rd 1/5	-3.6	[-3.9,-3.2]
4th 1/5	-3.7	[-4.1,-3.3]
5th(top) 1/5	Reference	
Diabetes	-4.3	[-4.5,-4.0]
Coronary heart disease	-1.8	[-2.2,-1.4]
Cancer	-3.6	[-4.3,-2.8]
Heart failure	-5.5	[-5.8,-5.2]
Lung disease	-5.0	[-5.6,-4.3]
Cerebrovascular disease	-7.3	[-7.9,-6.8]
Peripheral vascular disease	-2.5	[-3.0,-2.1]
Smokes	-5.2	[-5.7,-4.8]
Drug or alcohol abuse	-13.9	[-14.4,-13.4]
Immobility	-7.8	[-8.5,-7.2]

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Hemoglobin (g/dL)		
less than 9	-2.6	[-3.0,-2.3]
9-<11	-1.2	[-1.5,-0.9]
11 or higher		Reference
Serum albumin (g/dL)		
less than 3	-9.5	[-9.9,-9.2]
3-<3.5	-5.6	[-5.9,-5.3]
3.5 or higher		Reference
Body Mass Index (kg/m ²)		
less than 30		Reference
30 or higher	2.5	[2.2,2.7]
eGFR (1.73ml/min/m ²)	-0.4	[-0.5,-0.4]
County level unemployment rate	-0.9	[-1.0,-0.8]
Interaction term:		
Black & 1997	0.7	[-0.8,2.2]
Black & 1998	1.3	[-0.2,2.8]
Black & 1999	1.4	[-0.1,2.9]
Black & 2000	1.8	[0.3,3.2]
Black & 2001	2.6	[1.2,4.1]
Black & 2002	3.6	[2.1,5.0]
Black & 2003	3.6	[2.2,5.1]
Black & 2004	3.9	[2.4,5.3]
Black & 2005	3.1	[1.7,4.6]
Black & 2006	4.1	[2.7,5.6]
Black & 2007	4.3	[2.9,5.8]
Black & 2008	4.0	[2.5,5.4]
Black & 2009	4.6	[3.2,6.1]
Black & 2010	3.9	[2.5,5.4]
Black & 2011	5.4	[4.0,6.9]
Black & 2012	5.5	[4.1,7.0]
Black & 2013	4.5	[3.1,6.0]

*Percent change in the absolute probability of employment associated with a 1 unit increase in a covariate. †Change in average of the adjusted probabilities of employment associated with Black race from the first 6 years (1996-2001) to the middle 6 years (2002-2007). ‡ Change in average of the adjusted probabilities of employment from the first 6 years (1996-2001) to the last 6 years (2008-2013) associated with Black race. eGFR is estimated glomerular filtration rate.

Using a Poisson regression model (with identical covariates), the change in relative risk of employment between the first 6 years (1996-2001) and the middle 6 years (2002-2007) associated with Black race was +10.7% (p<0.001); the change in relative risk of employment between the first 6 years (1996-2001) and the last 6 years (2008-2013) associated with Black race was +14.7% (p<0.001).

Supplemental Table 4. Linear Probability Model Examining the Probability of Employment with Hispanic Ethnicity as an Interaction.

Covariates	Est (%) [*]	95% CI (%)
Change in probability of interaction from 1997-2001 to:		
2002-2007 [†]	0.1	[-0.8,0.9]
2008-2013 [‡]	2.3	[1.5,3.1]
Year		
1996	Reference	
1997	1.3	[0.5,2.1]
1998	1.5	[0.7,2.3]
1999	1.7	[1.0,2.5]
2000	0.7	[-0.1,1.5]
2001	1.8	[1.1,2.6]
2002	2.6	[1.8,3.3]
2003	1.7	[0.9,2.5]
2004	1.4	[0.7,2.2]
2005	2.4	[1.6,3.1]
2006	2.6	[1.8,3.4]
2007	3.2	[2.5,4.0]
2008	4.1	[3.3,4.8]
2009	6.3	[5.5,7.1]
2010	5.4	[4.6,6.2]
2011	5.4	[4.6,6.2]
2012	6.1	[5.3,6.9]
2013	5.8	[5.0,6.6]
Age group		
18-28	Reference	
29-38	-2.1	[-2.6,-1.6]
39-48	-2.4	[-2.8,-1.9]
49-54	-4.4	[-4.8,-3.9]
Female	-6.1	[-6.4,-5.9]
Race		
White	Reference	
Black	-7.8	[-8.1,-7.6]
Other	-1.6	[-2.1,-1.1]
Hispanic ethnicity	-11.0	[-12.6,-9.4]
Disability	-18.5	[-18.8,-18.2]
County level median household Income		
1st(bottom) 1/5	-6.9	[-7.3,-6.6]
2nd 1/5	-5.1	[-5.5,-4.7]
3rd 1/5	-3.6	[-3.9,-3.2]
4th 1/5	-3.7	[-4.1,-3.4]
5th(top) 1/5	Reference	
Diabetes	-4.2	[-4.5,-4.0]
Coronary heart disease	-1.8	[-2.2,-1.4]
Cancer	-3.6	[-4.3,-2.8]
Heart failure	-5.5	[-5.8,-5.2]
Lung disease	-5.0	[-5.6,-4.3]
Cerebrovascular disease	-7.3	[-7.8,-6.8]
Peripheral vascular disease	-2.5	[-3.0,-2.1]

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Smokes	-5.2	[-5.6,-4.8]
Drug or alcohol abuse	-14.0	[-14.5,-13.5]
Immobility	-7.8	[-8.5,-7.2]
Hemoglobin (g/dL)		
less than 9	-2.7	[-3.0,-2.3]
9-<11	-1.2	[-1.5,-0.9]
11 or higher		Reference
Serum albumin (g/dL)		
less than 3	-9.6	[-9.9,-9.2]
3-<3.5	-5.6	[-6.0,-5.3]
3.5 or higher		Reference
Body Mass Index (kg/m ²)		
less than 30		Reference
30 or higher	2.4	[2.2,2.7]
eGFR (1.73ml/min/m ²)	-0.4	[-0.5,-0.4]
County level unemployment rate	-0.9	[-0.9,-0.8]
Interaction term:		
Hispanic & 1997	0.9	[-1.3,3.2]
Hispanic & 1998	0.1	[-2.1,2.4]
Hispanic & 1999	-1.0	[-3.2,1.2]
Hispanic & 2000	1.8	[-0.4,3.9]
Hispanic & 2001	0.1	[-2.0,2.3]
Hispanic & 2002	-0.8	[-2.9,1.3]
Hispanic & 2003	0.8	[-1.3,2.9]
Hispanic & 2004	-0.1	[-2.2,2.0]
Hispanic & 2005	0.5	[-1.6,2.6]
Hispanic & 2006	0.5	[-1.5,2.6]
Hispanic & 2007	1.5	[-0.6,3.5]
Hispanic & 2008	2.6	[0.5,4.7]
Hispanic & 2009	1.9	[-0.1,4.0]
Hispanic & 2010	3.8	[1.8,5.9]
Hispanic & 2011	1.9	[-0.2,3.9]
Hispanic & 2012	2.0	[-0.0,4.1]
Hispanic & 2013	3.5	[1.5,5.6]

*Percent change in the absolute probability of employment associated with a 1 unit increase in a covariate. †Change in average of the adjusted probabilities of employment associated with Hispanic ethnicity from the first 6 years (1996-2001) to the middle 6 years (2002-2007). ‡ Change in average of the adjusted probabilities of employment from the first 6 years (1996-2001) to the last 6 years (2008-2013) associated with Hispanic ethnicity. eGFR is estimated glomerular filtration rate.

Using a Poisson regression model (with identical covariates), the change in relative risk of employment between the first 6 years (1996-2001) and the middle 6 years (2002-2007) associated with Hispanic ethnicity was +1.4% (p=0.56); the change in relative risk of employment between the first 6 years (1996-2001) and the last 6 years (2008-2013) associated with Hispanic ethnicity was +13.2% (p<0.001).

Supplemental Table 5. Linear Probability Model Examining the Probability of Employment with Lowest Quintile of Median Income as an Interaction.

Covariates	Est (%) [*]	95% CI (%)
Change in probability of interaction from 1997-2001 to:		
2002-2007 [†]	0.5	[-0.2,1.2]
2008-2013 [‡]	0.5	[-0.2,1.2]
Year		
1996	Reference	
1997	1.1	[0.3,1.9]
1998	1.6	[0.7,2.4]
1999	1.5	[0.6,2.3]
2000	1.0	[0.1,1.8]
2001	1.8	[1.0,2.6]
2002	2.3	[1.5,3.1]
2003	1.5	[0.7,2.3]
2004	1.0	[0.2,1.8]
2005	2.3	[1.5,3.1]
2006	2.4	[1.6,3.2]
2007	3.5	[2.7,4.2]
2008	4.2	[3.4,5.0]
2009	6.5	[5.7,7.3]
2010	5.9	[5.1,6.7]
2011	5.5	[4.7,6.4]
2012	6.0	[5.2,6.9]
2013	6.2	[5.4,7.0]
Age group		
18-28	Reference	
29-38	-2.1	[-2.6,-1.6]
39-48	-2.4	[-2.8,-1.9]
49-54	-4.4	[-4.8,-3.9]
Female	-6.1	[-6.4,-5.9]
Race		
White	Reference	
Black	-7.9	[-8.1,-7.6]
Other	-1.6	[-2.1,-1.1]
Hispanic ethnicity	-9.7	[-10.1,-9.4]
Disability	-18.5	[-18.8,-18.2]
County level median household Income		
1st(bottom) 1/5	-7.6	[-8.9,-6.3]
2nd 1/5	-5.1	[-5.5,-4.7]
3rd 1/5	-3.6	[-3.9,-3.2]
4th 1/5	-3.7	[-4.1,-3.4]
5th(top) 1/5	Reference	
Diabetes	-4.2	[-4.5,-4.0]
Coronary heart disease	-1.8	[-2.2,-1.3]
Cancer	-3.6	[-4.3,-2.8]
Heart failure	-5.5	[-5.8,-5.2]
Lung disease	-5.0	[-5.7,-4.3]
Cerebrovascular disease	-7.3	[-7.8,-6.8]
Peripheral vascular disease	-2.5	[-3.0,-2.1]
Smokes	-5.2	[-5.6,-4.8]
Drug or alcohol abuse	-14.0	[-14.5,-13.5]
Immobility	-7.9	[-8.5,-7.2]
Hemoglobin (g/dL)		
less than 9	-2.7	[-3.0,-2.3]
9-<11	-1.2	[-1.5,-0.9]
11 or higher	Reference	

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Serum albumin (g/dL)		
less than 3	-9.6	[-9.9,-9.2]
3-<3.5	-5.6	[-6.0,-5.3]
3.5 or higher		Reference
Body Mass Index (kg/m ²)		
less than 30		Reference
30 or higher	2.4	[2.2,2.7]
eGFR (1.73ml/min/m ²)	-0.4	[-0.5,-0.4]
County level unemployment rate	-0.9	[-0.9,-0.8]
Interaction term:		
Bottom 1/5 income & 1997	1.3	[-0.5,3.1]
Bottom 1/5 income & 1998	-0.1	[-1.9,1.6]
Bottom 1/5 income & 1999	0.7	[-1.0,2.5]
Bottom 1/5 income & 2000	-0.2	[-2.0,1.5]
Bottom 1/5 income & 2001	0.2	[-1.5,2.0]
Bottom 1/5 income & 2002	0.6	[-1.2,2.3]
Bottom 1/5 income & 2003	1.2	[-0.5,3.0]
Bottom 1/5 income & 2004	1.8	[0.1,3.5]
Bottom 1/5 income & 2005	0.5	[-1.2,2.3]
Bottom 1/5 income & 2006	1.0	[-0.7,2.7]
Bottom 1/5 income & 2007	-0.2	[-1.9,1.5]
Bottom 1/5 income & 2008	1.2	[-0.5,2.9]
Bottom 1/5 income & 2009	0.5	[-1.2,2.2]
Bottom 1/5 income & 2010	0.7	[-1.1,2.4]
Bottom 1/5 income & 2011	0.7	[-1.1,2.4]
Bottom 1/5 income & 2012	1.6	[-0.2,3.3]
Bottom 1/5 income & 2013	0.5	[-1.2,2.2]

*Percent change in the absolute probability of employment associated with a 1 unit increase in a covariate. †Change in average of the adjusted probabilities of employment associated with lowest income quintile from the first 6 years (1996-2001) to the middle 6 years (2002-2007). ‡Change in average of the adjusted probabilities of employment from the first 6 years (1996-2001) to the last 6 years (2008-2013) associated with lowest income quintile. eGFR is estimated glomerular filtration rate.

Using a Poisson regression model (with identical covariates), the change in relative risk of employment between the first 6 years (1996-2001) and the middle 6 years (2002-2007) associated with lowest income quintile was +2.3% (p=0.27); the change in relative risk of employment between the first 6 years (1996-2001) and the last 6 years (2008-2013) associated with lowest income quintile was +1.6% (p=0.43).

Supplemental Table 6. Nested Modified Poisson Regression Models.

Covariates	Calendar Year & Patient Demographics		+ Patient Comorbidities		+ Regional Unemployment	
	Percent change in RR*	p-value	Percent change in RR	p-value	Percent change in RR	p-value
Percent change in RR from 1997-2001 to:						
2002-2007 [†]	-0.39	0.53	3.45	<.001	5.35	<.001
2008-2013 [‡]	1.01	0.11	7.49	<.001	25.13	<.001
Covariates	RR	95% CI	RR	95% CI	RR	95% CI
Calendar Year						
Year						
1996	Reference		Reference		Reference	
1997	1.07	[1.04,1.11]	1.08	[1.04,1.12]	1.06	[1.02,1.10]
1998	1.10	[1.06,1.13]	1.10	[1.06,1.14]	1.06	[1.02,1.10]
1999	1.10	[1.07,1.14]	1.11	[1.07,1.16]	1.06	[1.02,1.10]
2000	1.08	[1.04,1.11]	1.09	[1.05,1.14]	1.03	[0.99,1.07]
2001	1.09	[1.05,1.12]	1.11	[1.07,1.15]	1.08	[1.04,1.12]
2002	1.06	[1.03,1.10]	1.09	[1.05,1.14]	1.11	[1.07,1.15]
2003	1.02	[0.99,1.05]	1.05	[1.01,1.09]	1.08	[1.04,1.12]
2004	1.01	[0.98,1.05]	1.06	[1.02,1.10]	1.06	[1.02,1.10]
2005	1.08	[1.05,1.12]	1.14	[1.10,1.18]	1.10	[1.06,1.15]
2006	1.11	[1.08,1.14]	1.18	[1.14,1.23]	1.11	[1.07,1.15]
2007	1.12	[1.09,1.16]	1.20	[1.16,1.25]	1.16	[1.11,1.20]
2008	1.11	[1.08,1.15]	1.20	[1.15,1.24]	1.21	[1.17,1.26]
2009	1.07	[1.03,1.10]	1.15	[1.11,1.20]	1.36	[1.30,1.41]
2010	1.02	[0.99,1.05]	1.10	[1.06,1.15]	1.32	[1.27,1.38]
2011	1.03	[1.00,1.07]	1.11	[1.07,1.16]	1.30	[1.25,1.35]
2012	1.13	[1.09,1.16]	1.20	[1.15,1.24]	1.34	[1.29,1.40]
2013	1.15	[1.11,1.18]	1.22	[1.18,1.27]	1.33	[1.28,1.38]
Demographics and Socioeconomic status						
Age group						
18-28	Reference		Reference		Reference	
29-38	0.89	[0.87,0.90]	0.95	[0.93,0.97]	0.95	[0.93,0.97]
39-48	0.83	[0.81,0.84]	0.94	[0.92,0.96]	0.95	[0.93,0.97]
49-54	0.71	[0.70,0.72]	0.86	[0.84,0.88]	0.87	[0.85,0.88]
Female	0.77	[0.76,0.78]	0.77	[0.76,0.78]	0.77	[0.76,0.78]
Race						
White	Reference		Reference		Reference	
Black	0.72	[0.71,0.73]	0.71	[0.70,0.72]	0.72	[0.71,0.73]
Other	0.92	[0.90,0.93]	0.91	[0.89,0.93]	0.92	[0.90,0.94]
Hispanic ethnicity	0.64	[0.63,0.65]	0.64	[0.62,0.65]	0.65	[0.64,0.67]
Disability	0.22	[0.22,0.23]	0.26	[0.25,0.27]	0.26	[0.25,0.27]
County level median household Income						
1st(bottom) 1/5	0.63	[0.62,0.64]	0.68	[0.67,0.69]	0.76	[0.74,0.77]
2nd 1/5	0.76	[0.75,0.77]	0.80	[0.79,0.82]	0.84	[0.83,0.86]
3rd 1/5	0.83	[0.82,0.85]	0.87	[0.86,0.89]	0.90	[0.88,0.91]
4th 1/5	0.83	[0.82,0.85]	0.85	[0.83,0.86]	0.89	[0.88,0.91]
5th(top) 1/5	Reference		Reference		Reference	
Comorbidities						
Diabetes			0.85	[0.84,0.86]	0.85	[0.84,0.86]
Coronary heart disease			0.90	[0.88,0.92]	0.90	[0.87,0.92]
Cancer			0.86	[0.82,0.89]	0.85	[0.82,0.89]
Heart failure			0.72	[0.71,0.74]	0.72	[0.71,0.74]
Lung disease			0.64	[0.60,0.67]	0.64	[0.60,0.67]
Cerebrovascular disease			0.55	[0.53,0.58]	0.55	[0.53,0.58]
Peripheral vascular disease			0.80	[0.78,0.83]	0.80	[0.78,0.83]
Smokes			0.77	[0.75,0.79]	0.77	[0.75,0.79]
Drug or alcohol abuse			0.36	[0.35,0.38]	0.37	[0.35,0.38]
Immobility			0.33	[0.30,0.35]	0.33	[0.30,0.36]

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Hemoglobin (g/dL)				
less than 9	0.89	[0.87,0.90]	0.89	[0.87,0.90]
9-<11	0.95	[0.94,0.97]	0.95	[0.94,0.97]
11 or higher	Reference		Reference	
Serum albumin (g/dL)				
less than 3	0.68	[0.67,0.70]	0.68	[0.67,0.69]
3-<3.5	0.84	[0.82,0.85]	0.84	[0.82,0.85]
3.5 or higher	Reference		Reference	
Body Mass Index (kg/m ²)				
less than 30	Reference		Reference	
30 or higher	1.11	[1.10,1.13]	1.11	[1.10,1.12]
Unemployment rate				
eGFR (1.73ml/min/m ²)	0.98	[0.97,0.98]	0.98	[0.97,0.98]
County level unemployment rate			0.96	[0.95,0.96]

* RR is relative risk. †Percent change in average RR of employment from first 6 years (1996-2001) to middle 6 years (2002-2007). ‡Percent change in average RR of employment from first 6 years (1996-2001) to last 6 years (2008-2013). eGFR is estimated glomerular filtration rate. The ratio of the Deviance to DF from the full Poisson regression model was 0.6791, smaller than but not far from one, indicating there was no obvious model misspecification or an under-dispersed response variable.

Supplemental Table 7. Linear Probability Model Examining the Probability of Employment at the Onset of Dialysis, Adjusted for Use of Home Dialysis at the Onset of ESRD.

Covariates	Est (%) [*]	95% CI (%)
Change in probability of interaction from 1997-2001 to:		
2002-2007 [†]	1.8	[1.5,2.1]
2008-2013 [‡]	5.1	[4.7,5.4]
Year		
1996	Reference	
1997	1.9	[1.1,2.6]
1998	2.2	[1.5,2.9]
1999	2.5	[1.7,3.2]
2000	1.9	[1.2,2.7]
2001	2.9	[2.2,3.7]
2002	3.7	[3.0,4.4]
2003	3.0	[2.3,3.7]
2004	2.7	[2.0,3.4]
2005	3.8	[3.1,4.5]
2006	4.1	[3.4,4.8]
2007	4.9	[4.2,5.6]
2008	5.8	[5.1,6.5]
2009	8.0	[7.2,8.7]
2010	7.3	[6.6,8.0]
2011	6.7	[6.0,7.5]
2012	7.1	[6.4,7.8]
2013	6.9	[6.2,7.6]
Age group		
18-28	Reference	
29-38	-2.2	[-2.7,-1.8]
39-48	-2.3	[-2.7,-1.9]
49-54	-4.2	[-4.6,-3.7]
Female	-6.6	[-6.9,-6.4]
Race		
White	Reference	
Black	-7.1	[-7.3,-6.8]
Other	-1.5	[-2.0,-1.0]
Hispanic ethnicity	-9.1	[-9.5,-8.8]
Disability	-18.2	[-18.5,-17.9]
County level median household Income		
1st(bottom) 1/5	-7.0	[-7.4,-6.6]
2nd 1/5	-5.2	[-5.5,-4.8]
3rd 1/5	-3.5	[-3.9,-3.2]
4th 1/5	-3.5	[-3.9,-3.2]
5th(top) 1/5	Reference	
Diabetes	-4.4	[-4.7,-4.2]
Coronary heart disease	-1.7	[-2.1,-1.3]
Cancer	-2.9	[-3.7,-2.2]
Heart failure	-5.0	[-5.3,-4.7]
Lung disease	-4.5	[-5.2,-3.9]
Cerebrovascular disease	-7.0	[-7.6,-6.5]
Peripheral vascular disease	-2.5	[-2.9,-2.0]
Smokes	-5.2	[-5.6,-4.8]
Drug or alcohol abuse	-13.2	[-13.7,-12.7]
Immobility	-7.3	[-8.0,-6.6]
Hemoglobin (g/dL)		
less than 9	-1.5	[-1.8,-1.1]
9-<11	-0.6	[-0.9,-0.2]
11 or higher	Reference	

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Serum albumin (g/dL)		
less than 3	-8.0	[-8.3,-7.6]
3-<3.5	-4.6	[-4.9,-4.2]
3.5 or higher	Reference	
Body Mass Index (kg/m²)		
less than 30	Reference	
30 or higher	2.7	[2.4,2.9]
eGFR (1.73ml/min/m²)	-0.5	[-0.5,-0.4]
County level unemployment rate	-0.9	[-0.9,-0.8]
Modality		
In Center Hemo-dialysis	Reference	
Home dialysis	14.6	[14.2,14.9]

*Percent change in the absolute probability of employment associated with a 1 unit increase in a covariate. †Change in average of the adjusted probabilities of employment from the first 6 years (1996-2001) to the middle 6 years (2002-2007). ‡Change in average of the adjusted probabilities of employment from the first 6 years (1996-2001) to the last 6 years (2008-2013). eGFR is estimated glomerular filtration rate.

Using a Poisson Regression model (with identical covariates), the change in relative risk of employment between the first 6 years (1996-2001) and the middle 6 years (2002-2007) was +8.0% (p<0.001); the change in relative risk of employment between the first 6 years (1996-2001) and the last 6 years (2008-2013) was +26.7% (p<0.001).

Supplemental Table 8. Linear Probability Model Examining the Probability of Employment at the Onset of Dialysis, Including Patients with Pre-emptive Kidney Transplants.

Covariates	Est (%) [*]	95% CI (%)
Change in probability of interaction from 1997-2001 to:		
2002-2007 [†]	1.3	[1.0,1.6]
2008-2013 [‡]	5.2	[4.9,5.6]
Year		
1996		Reference
1997	1.3	[0.6,2.1]
1998	1.4	[0.7,2.2]
1999	1.5	[0.8,2.2]
2000	0.8	[0.1,1.5]
2001	1.9	[1.1,2.6]
2002	2.7	[2.0,3.4]
2003	1.8	[1.1,2.5]
2004	1.5	[0.8,2.2]
2005	2.5	[1.8,3.2]
2006	2.6	[1.9,3.3]
2007	3.6	[2.9,4.3]
2008	4.7	[4.0,5.4]
2009	7.1	[6.4,7.8]
2010	6.6	[5.8,7.3]
2011	6.3	[5.6,7.0]
2012	6.8	[6.1,7.6]
2013	6.9	[6.2,7.6]
Age group		
18-28		Reference
29-38	-2.1	[-2.6,-1.7]
39-48	-2.4	[-2.8,-1.9]
49-54	-4.5	[-4.9,-4.0]
Female	-6.0	[-6.3,-5.8]
Race		
White		Reference
Black	-8.7	[-8.9,-8.4]
Other	-2.4	[-2.8,-1.9]
Hispanic ethnicity	-10.5	[-10.9,-10.2]
Disability	-19.0	[-19.3,-18.7]
County level median household Income		
1st(bottom) 1/5	-7.2	[-7.6,-6.8]
2nd 1/5	-5.3	[-5.7,-4.9]
3rd 1/5	-3.7	[-4.0,-3.3]
4th 1/5	-3.9	[-4.2,-3.5]
5th(top) 1/5		Reference
Diabetes	-4.9	[-5.1,-4.6]
Coronary heart disease	-2.1	[-2.5,-1.7]
Cancer	-4.3	[-5.0,-3.5]
Heart failure	-6.0	[-6.3,-5.7]

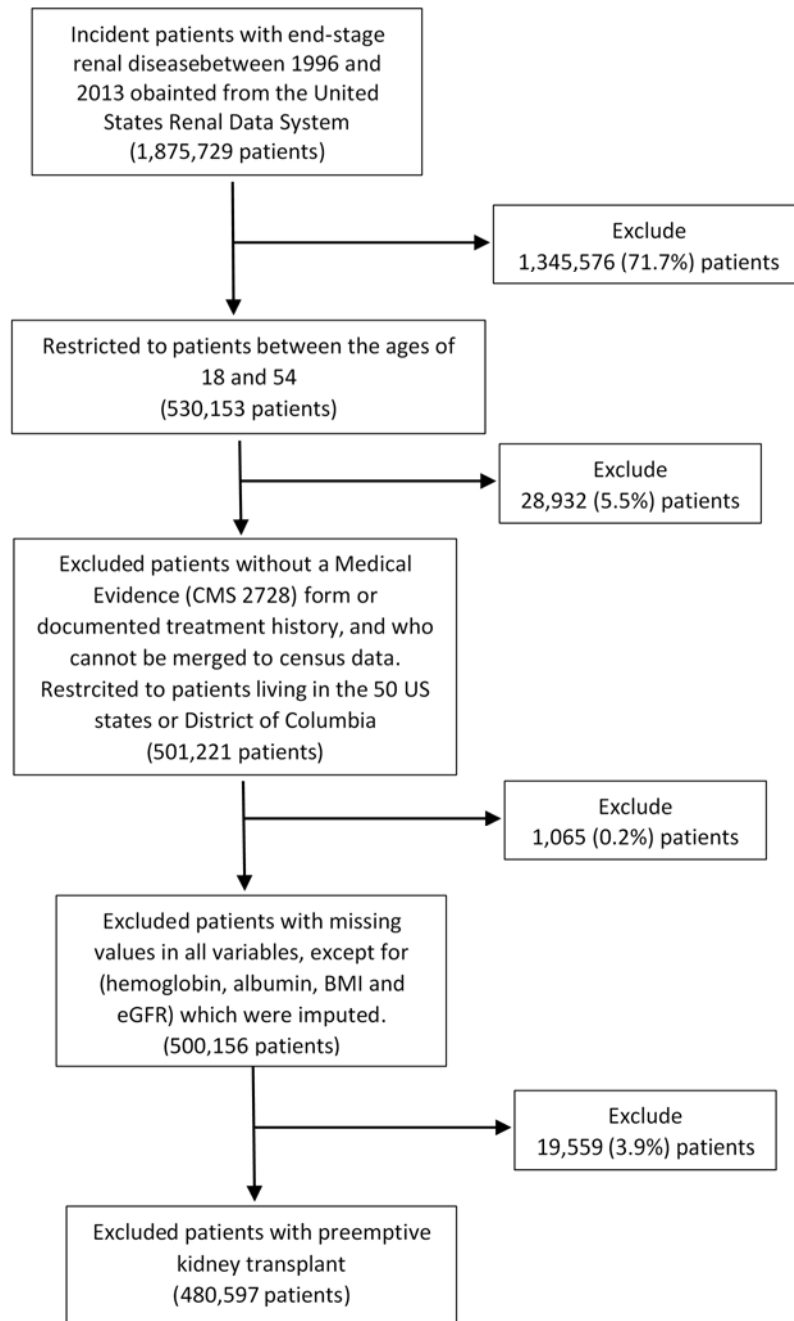
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Lung disease	-5.4	[-6.0,-4.7]
Cerebrovascular disease	-7.6	[-8.2,-7.1]
Peripheral vascular disease	-2.7	[-3.1,-2.2]
Smokes	-5.9	[-6.3,-5.5]
Drug or alcohol abuse	-14.6	[-15.1,-14.0]
Immobility	-8.4	[-9.1,-7.7]
Hemoglobin (g/dL)		
less than 9	-3.8	[-4.1,-3.4]
9-<11	-2.1	[-2.4,-1.8]
11 or higher		Reference
Serum albumin (g/dL)		
less than 3	-10.8	[-11.2,-10.4]
3-<3.5	-6.6	[-7.1,-6.2]
3.5 or higher		Reference
Body Mass Index (kg/m ²)		
less than 30		Reference
30 or higher	2.0	[1.8,2.3]
eGFR (1.73ml/min/m ²)	-0.3	[-0.3,-0.3]
County level unemployment rate	-0.9	[-1.0,-0.9]

*Percent change in the absolute probability of employment associated with a 1 unit increase in a covariate. †Change in average of the adjusted probabilities of employment from the first 6 years (1996-2001) to the middle 6 years (2002-2007). ‡Change in average of the adjusted probabilities of employment from the first 6 years (1996-2001) to the last 6 years (2008-2013). eGFR is estimated glomerular filtration rate.

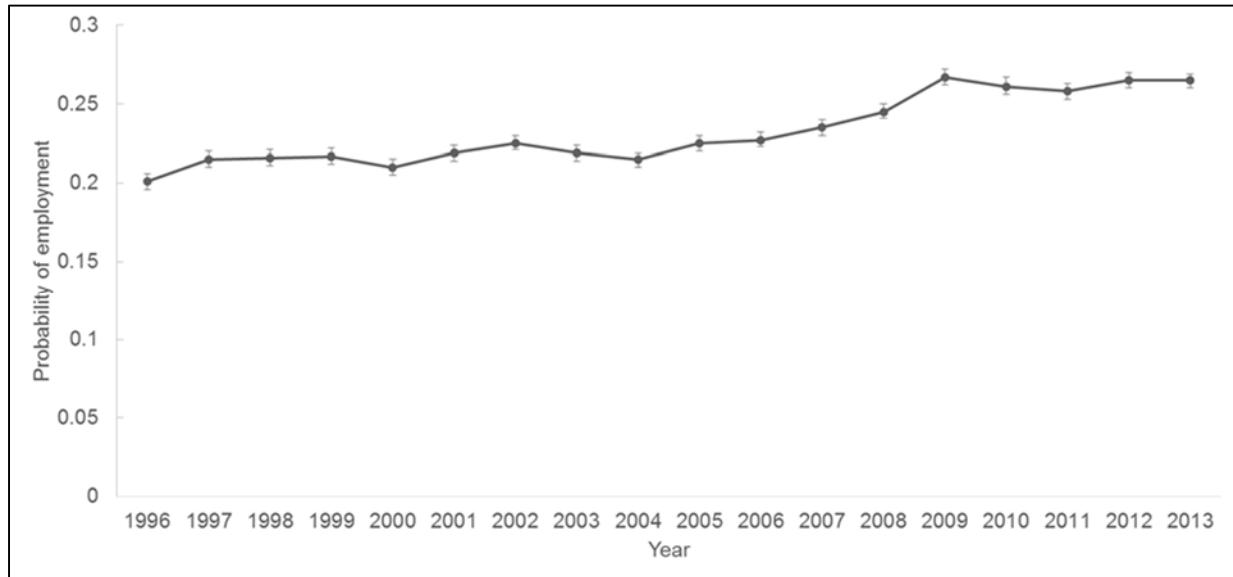
Using a Poisson Regression model (with identical covariates), the change in relative risk of employment between the first 6 years (1996-2001) and the middle 6 years (2002-2007) was +5.3% (p<0.001); the change in relative risk of employment between the first 6 years (1996-2001) and the last 6 years (2008-2013) was +25.4% (p<0.001).

Supplemental Figure S1: Study Selection Diagram



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Supplemental Figure S2: Predicted Probabilities of Employment over Time at Dialysis Initiation Using a Poisson Regression Model.



Note: Predicted probabilities are derived from Poisson regression results. Standard errors for predicted probabilities were estimated using the delta method.