Employee and Employer Effects on Drug Treatment Episodes

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Individual and Employer Impacts

- This study investigates the lengths of drug treatment episodes with explicit comparisons of individual and employer impacts on episode length.
- In analyzing health care utilization, researchers typically look at individual characteristics.
- With the advent of managed care, different employers and/or caregivers may act differently for similar employees.
- Rather than simply identifying employers with binary variables, employers are characterized by employer-specific year-specific measures such as mean age, mean employment status, or mean percentage male, for example, since employer health care benefits packages policies may be proxied by the types of workers that are covered.
- Employer-specific mean coinsurance rates and deductibles are also calculated.

Database

- The database is a population of 34,000 individuals with either a drug or an alcoholism treatment diagnosis.
- It was selected from a large health insurance claims database of 36 self-insured employers, for all treatment events starting January 1, 1989, and ending December 31, 1991.

Database (2)

- We included claims of all beneficiaries less than 65 years of age (to avoid Medicare overlap) who incurred at least one drug abuse or alcoholism treatment event in the 3-year period.
- For tractability we limited the database to those subjects with between one and ten episodes in the three-year period.
- This provided 153,115 episodes over 33,998 subjects.

One-Day v. Multi-day Episodes

	Total	1-Day	Multi-day
Number	153115	63761	89354
Fraction	1.0000	0.4164	0.5836
Duration	32.5116	1.0000	54.9975
Male Patient	0.6828	0.6885	0.6787
Age	36.7794	36.2680	37.1444
Hourly	0.5403	0.5373	0.5424
Active	0.8541	0.8547	0.8537
Self	0.5886	0.5716	0.6008
Starting Date	505.5964	530.2268	488.0207
Deductible	36.8618	18.1130	50.2405
Copay	0.0870	0.0841	0.0891

Analysis

We use the Anderson-Gill model for multiple episodes.

$$logT_{ikm} = \sum_j \beta_j x_j + \sum_n \delta_n y_n + \sum_g \eta_g f_g + \sum_i \sum_k \sum_m \alpha_{ikm} L_{ikm} + \sum_{v=1}^{v=k} \sum_{u=1}^{u=k} \rho_{uv} z_{uv}$$

T_{ikm} refers to the duration of the i^{th} episode in the sequence, with diagnosis k, at treatment location m.

x_j refer to individual level variables including age, gender, and employment status.

y_n refer to individual insurance variables: coinsurance, deductibles

f_g characterize the employer where the subject either works or has coverage as the dependent of a worker .

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L_{ikm}, for example, is **EPS_3PO** with a value of 1, indicating that the current episode is the third (3) episode in the sequence and is a psychiatric (P) outpatient (O) episode.

z_{uv}, for example, is **PSY_P_ALC** ("**PSY**ch episode where the **P**revious episode was an **ALC**oholism episode") has a value of 1.

Hazard determinants Variable	Coefficient	Std. error	t-stat
Individual			
Male	0.1102	0.0064	17.15
Age	-0.0028	0.0002	-11.50
Hourly	-0.0003	0.0071	-0.04
Active	-0.0262	0.0091	-2.87
Self	-0.0637	0.0067	-9.51
Starting Date	0.0006	0.0000	8.80
Insurance			
Episode Deductible	-0.0043	0.0000	-97.13
Episode Copay Rate	-0.0036	0.0295	-0.12
Employer			
MALE_AVG	0.1264	0.0809	1.56
AGE_AVG	-0.0010	0.0013	-0.79
HRLY_AVG	0.1615	0.0148	10.93
ACTV_AVG	-0.1302	0.0207	-6.28
SELF_AVG	-0.4878	0.0473	-10.31
DCT_AVG	0.0049	0.0002	25.65
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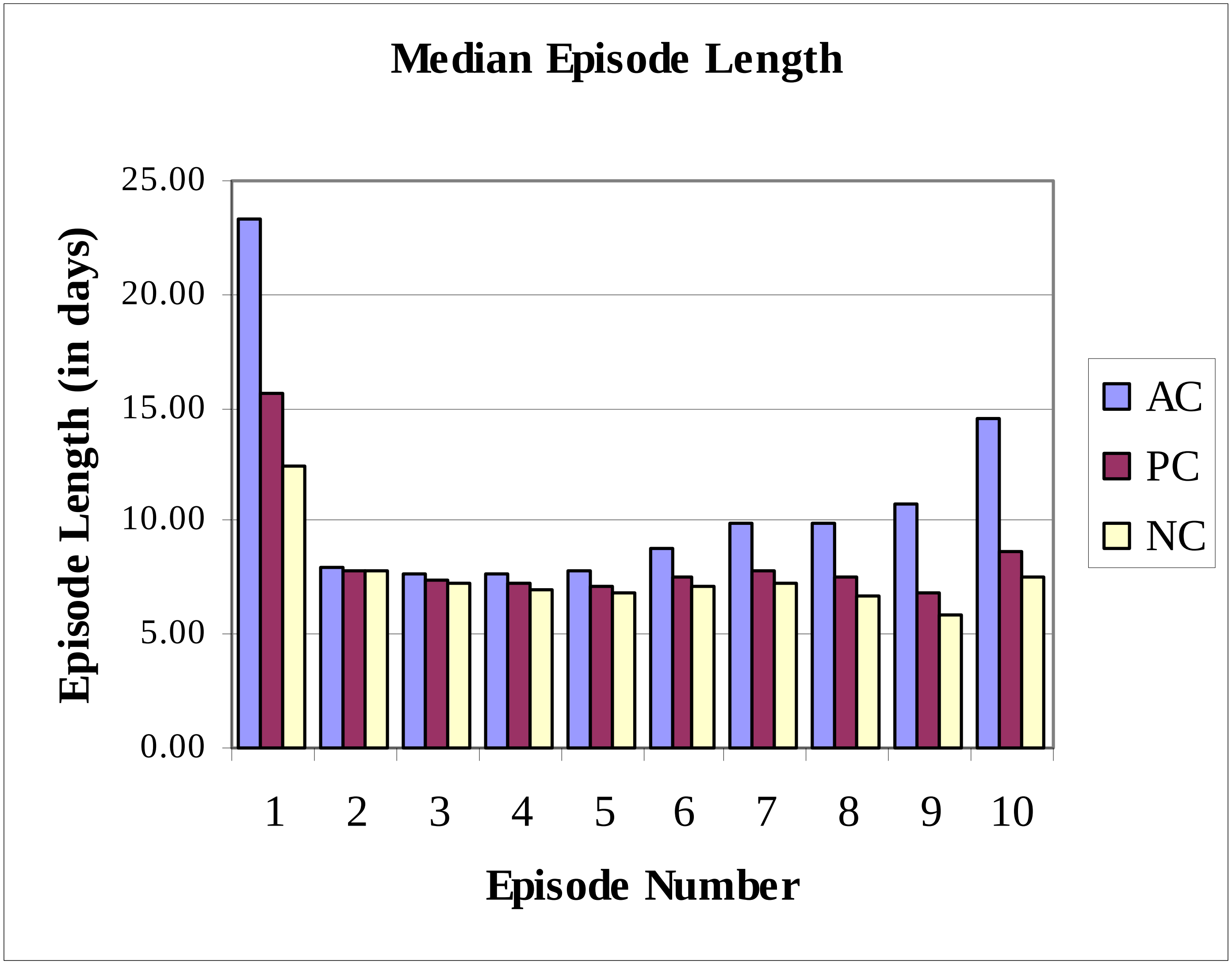

Median Episode Length
Episode Length (in days)
25.00
20.00
15.00
10.00
5.00
0.00
1
2
3
4
5
6
7
8
9
10
Episode Number
AC
PC
NC

Conclusions

- Episodes are complex.
- We identify both individual and employer effects on episode length.
- We find that episode lengths vary by the diagnosis type, and that the lengths (and by inference cost and utilization) may depend on the treatments that occurred in previous episodes.
- We provide a method that adjusts episode lengths according to the probability of censoring.