**Effect of Oregon Predictive Scheduling Law on Unemployment/Benefits + Spillovers**

**Background**

In 2017, Oregon governor Kate Brown signed the Oregon Predictive Scheduling Law which took effect in July of 2018. The law requires all employees in the state that work at companies in the retail, hospitality, or food services industries with 500 or more employees to provide a written work schedule to their employees 7 days in advance of the first day included in the schedule. The legislation was updated in 2020, with an extended notice period of 14 days.

Employers must pay employees one additional hour at the regular hourly rate of pay, in addition to any wages earned during the shift when:

* An employer adds more than 30 minutes of work to an employee’s shift
* An employer changes the hours of an employee’s work shift without reducing the number of hours they are scheduled to work
* An employer schedules an employee for an additional shift

Employers must pay employees half of their regular rate of pay, per hour, for each scheduled hour that an employee does not work when the change results in lost hours or when an employer does not ask you to perform work when you are scheduled for an on-call shift.

Employers may maintain a voluntary standby list of employees who are willing to work additional hours. The employee is not required to accept the additional hours that have been offered, but is not eligible for the additional compensation outlined by the requirements.

Employers are also required to provide employees with a written “good faith estimate” of the work schedule, including the median number of hours the employee is expected to work in an average month.

**Research Questions**

*Q0: What is the effect of the Oregon Predictive Scheduling Law on hours and total wage volatility?*

An important first stage is to understand the direct effect of the law on hours and total wage volatility. For example, if the requirement induces firms to predict changes in demand more accurately over a longer time horizon, then we may see no changes in hours or total wage volatility. Similarly, employers are required to provide employees with a written “good faith estimate” of their work schedule. However, it is not clear to what extent employers stick to these schedules. Lastly, it is not clear how employers utilize the voluntary standby list or how well-informed workers are about the list; in the extreme case where all workers are on the list and they do not know it is voluntary, employers would be able to arbitrarily call-in workers as before.

*Q1: What is the effect of the Oregon Predictive Scheduling Law on unemployment, wages, and benefits?*

One important margin of adjustment for firms is worker hours, since worker hours are less sticky than wages. Many firms opposed predictive scheduling because they claimed to need just-in-time scheduling to respond to fluctuations in consumer demand. If firms are less able to adjust hours to respond to demand, they may instead reduce employment, wages, or benefits.

*Q2: How does the Oregon Predictive Scheduling Law affect firm responses to minimum wage increases?*

In a perfectly competitive model, firms may respond to the minimum wage by cutting hours, cutting benefits, or cutting employment. The empirical literature finds that firms [adjust](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3863757) hours and benefits substantially in response to minimum wage increases. If firms cannot adjust hours, firms may increase their benefits and employment adjustments.

Oregon’s minimum wages [increases](https://www.oregon.gov/boli/workers/Pages/minimum-wage-schedule.aspx) every July. Minimum wage increases also differ by whether the firm is in the Portland metro, non-urban, or “standard”.

*Q3: Are there spillovers from firms affected by the Oregon Predictive Scheduling Law to other firms?*

One possibility is that for other firms to be able to attract labor, they must also implement predictive scheduling, even though they are not bound to do so. Previous [studies](https://www.nytimes.com/2021/03/05/business/economy/amazon-wage-effect.html) have found that when large firms increase their wages, other local firms also increase their wages.

Another possibility is that workers could sort into firms with different wage-hours flexibility contracts. Workers have different willingness-to-pay for predictive scheduling; Mas and Pallais (2017) find that mean WTP to avoid employer discretion is 29.3% of wages, with a standard deviation of 1.7. In this case, firms who are not directly restricted by the law would increase wages and retain or increase hours volatility.

**Literature**

Irregular scheduling

* Mas and Pallais (2017): High WTP for regular schedules
* Fugiel and Lambert (2019):
  + Depending on the data source, estimate 5.1%-13.6% of workers experience unstable timing
  + 20% of employees have >25% volatility in their schedules; 10% of employees have >50% volatility
  + 11% of employees work on-call (notice 3 days or less)
* Henly and Lambert (2014): Unpredictable schedules cause work-life conflict
* Lambert (2008): Why management prefers irregular scheduling
  + Managers keep headcounts high to avoid paying overtime or to maximize their ability to call workers in at the last minute
  + Managers are held accountable for maintaining a particular ratio between the number of hours employees worked and either store sales or traffic
  + No manager guaranteed a minimum number of hours for employees in hourly jobs, whether full-time or part-time
  + Full-time flex jobs reduce hours but maintain full-time benefits
  + Only 3/17 firms studied posted schedules more than a week in advance. Most posted schedules 2-4 days in advance.
  + Last-minute adjustments to posted schedules were common, with those with less seniority having the most changes
* LaBriola and Schneider (2020): Use respondents who respond in four consecutive months of the CPS and do not change jobs, calculate corrected sample standard deviation of hours worked in each reference week, divided by the mean of hours worked in each reference week

Minimum wage adjustments

* Harasztosi and Lindner (2019): In the Hungarian context, a minimum wage hike induces a 10% decrease in employment. 25% of the increased cost of labor is covered by lower profits; 75% is covered by consumers.
* Yu, Mankad, and Shunko (2021): Using data from a chain of fashion retail stores, $1 increase in the minimum wage has a negligible impact on the total labor hours used by the stores, but leads to a 27.7% increase in the number of workers scheduled per week and a 19.4% reduction in weekly hours per worker. The deviation in weekly hours increases by up to 32.9%.
* Royalty (2001), Simon and Kaetsner (2004), Marks (2011), Clemens, Kahn, and Meer (2018): Changes in employer-provided health insurance offset increases in minimum wage increases
* Ku (forthcoming), Coviello, Deserrano, and Persico (2020) find that productivity increases after a minimum wage hike
* Clemens and Strain (2020): Model and stylized example of how minimum wage can reduce welfare if it results in irregular schedules
* Synthetic control
  + Dube and Zipperer (2015): Synthetic control, use wages, unemployment, industry, unionization rate
  + Sabia et al. (2012): NY synthetic control study, use average hourly wages for prime-age male workers, unemployment rate for prime-age male workers, industrial mix, occupation composition, unionization rate for prime-age male workers

Spillovers

* Derenoncourt, Noelke, and Weil (2021): When minimum wages increase at large employers, other local businesses increase wages as well

**Data**

* CPS
  + Demographics: Age, sex, # children, # children < 5, education, state
  + Employment and labor force status
  + Occupation
  + Industry
  + Hours usually worked per week at main job, all jobs + hours worked last week
  + Full/part time status
  + Earnings
  + Employee-sponsored health insurance
  + Number of employees in firm
* Oregon linked employer-employee
  + Additional quarterly earnings and quarterly hours worked for all employees
* ~~General Social Survey, Work Schedules Module: Nothing past 2017~~
* ~~CPS Contingent Worker Supplement: 2017 only~~
* SHED: Data on how many days in advance an employer gives notice, but doesn’t seem to record the state of work/residence
* NLSY97: Data on unstable hours, volatility of hours, and if notice <= 7 days, biennial survey. The respondent’s state is in the NLSY Geocode Codebook Supplement, which is only available by agreement.
* ADP
  + They could have data on hours worked per week, would have to inquire
* JPMorgan Chase Institute
  + Data on income volatility (but not hours), would have to ask to use
* LEHD
  + Employment Characteristics File — available 1990Q1 onwards
    - In the auxiliary SEIN dataset (ecf\_zz\_sein\_aux): employment in each month of the quarter
    - In the main SIN file (ecf\_zz\_sein): NAICS
  + Employment History Files — available 1991Q1 onwards
    - Quarterly earnings
    - Employer Identification Number
    - Can I see from the EHF is someone is *unemployed* ? If they are missing does that mean that they are unemployed that year?
  + Individual Characteristics File

**Methodology**

Use CPS data unless otherwise noted.

Event study:

* 2018 law effective
* 2020 law extended notice period to 14 days
* Annual minimum wage increases

*Q0: What is the effect of the Oregon Predictive Scheduling Law on hours and total wage volatility?*

Define

* Hours volatility:
  + Hours worked last week – usual hours worked
  + LaBriola and Schneider (2020) measure (perhaps more precise, but smaller sample)
* Wage volatility: (Requires secondary data source)

Synthetic control estimation of hours volatility and wage volatility around the 2018 law implementation and the 2020 law extension. Restrict to affected industries and employers with > 500 employees.

Synthetic control predictors: wages, unemployment, industry, unionization rate

Other controls: worker demographics

*Q1: What is the effect of the Oregon Predictive Scheduling Law on unemployment, wages, and benefits?*

Synthetic control estimation of unemployment, wages, and health insurance around the 2018 law implementation and the 2020 law extension. Restrict to affected industries and employers with > 500 employees. Wages can be estimated using CPS earnings/usual hours, but would be better to use a secondary data source given the level of volatility.

*Q2: How does the Oregon Predictive Scheduling Law affect firm responses to minimum wage increases?*

DiD design comparing unemployment and health insurance provision in firms that are affected (retail, hospitality, food service and > 500 employees) to those that are not.

RD design comparing unemployment and health insurance provision for firms in affected industries that have more than 500 employees to firms in affected industries that have fewer than 500 employees. (Requires secondary data source that includes more granular employee count.)

*Q3: Are there spillovers from firms affected by the Oregon Predictive Scheduling Law to other firms?*

OLS: Same regression as for Q1, restricting to *unaffected* industries and firm sizes.

IV estimation: First stage is the effect of the law on directly affected firms. Second stage is the effect of directly affected firms on other firms.

Finer IV: Use only firms in the same commuting zone. (Requires firm locations.)