

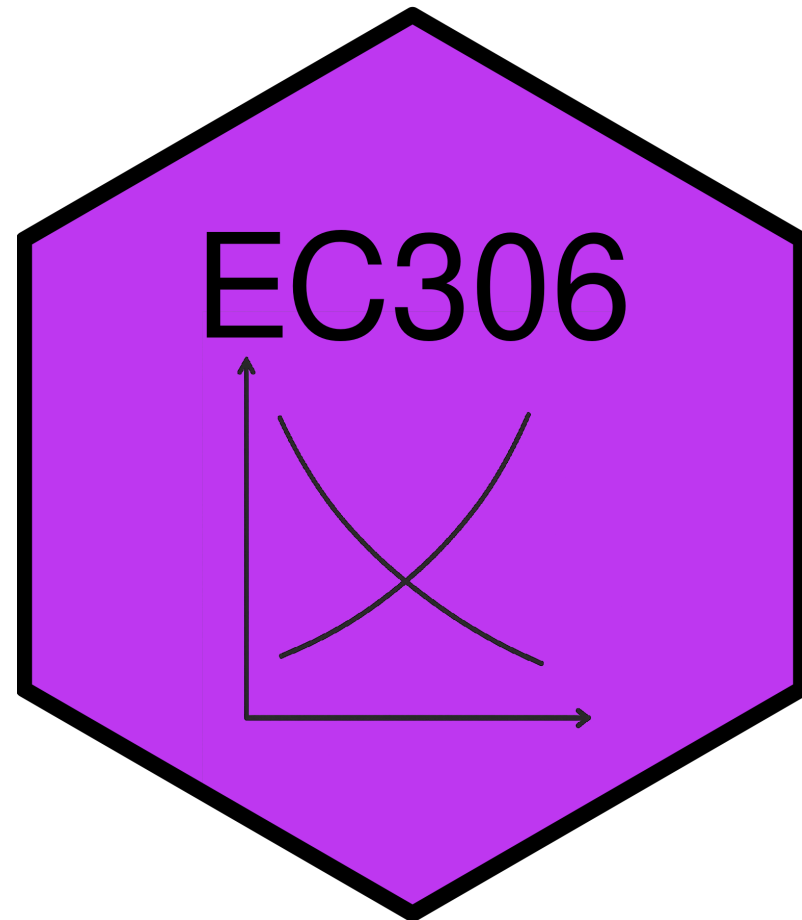
Labour Supply and Social Insurance Programs

EC306- Wages and Employment

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Goals of This Section

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In this section we will:

- Describe Canada's main social insurance programs and how they differ from income support
- Use the labour supply model to show how EI changes work incentives, and for whom
- Analyze how a disability changes the potential income constraint
- Analyze the work incentives of workers' compensation, and the problem of setting the compensation level
- Examine the evidence, much of it from natural experiments

Social Insurance Programs in Canada

Social Insurance vs. Income Support

! Key Definition

Social insurance programs: programs that insure workers against income losses from events like job loss or disability, with eligibility and benefits tied to past contributions and work history

- Part of the social safety net, like the income support programs of Chapter 4
 - The losses they cover can be temporary or permanent
- Unlike income support, the major Canadian programs are **not means-tested**
 - Eligibility depends on your own contributions, not your family's income or wealth
- Same method as Chapter 4: draw the constraint without the program, draw it with the program, compare the choices

Social Insurance Transfers in Canada, 2022

In 2022, 82% of individuals received a government transfer; far fewer collected EI or workers' compensation

	Percent of individuals	Average amount
Benefits		
All government transfers	82.4	\$9,023
Employment Insurance	8.9	\$7,866
Workers' compensation	2.2	\$9,786
Canada/Quebec Pension Plan	25.4	\$8,299
Contributions		
Employment Insurance	59.4	\$644
Canada/Quebec Pension Plan	59.8	\$2,439

Source: Canadian Income Survey (2022). Individuals aged 15 and older; average amount in 2022 dollars among those receiving or contributing. EI includes regular, maternity, parental, and sickness benefits; C/QPP includes retirement, disability, and survivor benefits.

Employment Insurance

Financing

- Premiums from employees and employers, on earnings up to \$65,700 (2025)
- Employees pay 1.64% of insurable earnings; employers pay 1.4 times that, about 2.30%
- Rates differ in Quebec, which runs its own maternity and parental benefits

Regular benefits

- For job loss through no fault of your own; quitting doesn't qualify
- Self-employment earnings are not insured
- 55% of insurable earnings, up to \$695 a week (2025)
- 420 to 700 hours of work to qualify, then 14 to 45 weeks of benefits
 - Fewer hours needed, and more weeks paid, where unemployment is high
- Must be actively looking for work

- Maternity and parental benefits come in Chapter 6

Insurance for Illness and Disability

! Key Definition

Disability: an umbrella term for impairments, activity limitations, and restrictions on participation, arising from the interaction between a health condition and a person's surroundings and circumstances (World Health Organization)

- A few days: job-protected sick leave under provincial employment standards, usually unpaid
- Up to 26 weeks: [EI sickness benefits](#)
 - 55% of earnings, up to \$695 a week; needs a medical certificate; one-week wait
 - Only if the employer offers no paid sick leave or short-term disability coverage
- Long term or permanent: [C/QPP disability benefits](#)
 - Must have contributed in 4 of the 6 years before the disability
 - CPP pays \$598 to \$1,673 a month in 2025; converts to a retirement pension at 65
 - Private long-term disability insurance can top it up

Workers' Compensation

Key Definition

Workers' compensation: income support for people who can't work because of a work-related injury or occupational disease

- Each province and territory runs its own program, as does the federal government for its own workers
- The main difference between them is generosity
 - Ontario (WSIB): 85% of earnings
 - Saskatchewan: 90%
 - Nova Scotia: 75% for the first 26 weeks, then 85%
 - Each also sets its own maximum benefit
- The largest program of all, the C/QPP retirement pension, comes in Chapter 7

iClicker Question

Ana and Ben are laid off from the same plant. Both earned \$50,000 a year and worked the same hours. Ana's spouse earns \$150,000; Ben lives alone with no savings. Under EI regular benefits:

- A) Both receive the same weekly benefit
- B) Only Ben qualifies, because Ana's family income is too high
- C) Both qualify, but Ben gets more because his need is greater
- D) Ana gets more, because her household paid more in premiums
- E) Ana must use up her family's savings before she qualifies

Unemployment Insurance

Unemployment Insurance and Work Incentives

Key Definition

Unemployment insurance (UI): benefits paid to workers who lose their job, much higher than social assistance, to support them while they look for work

Three features shape the potential income constraint:

1. Entrance requirement (ER): how long you must work before you qualify
 2. Replacement rate: the share of earnings that benefits replace
 3. Maximum duration: how many weeks you can collect
- The model assumes jobs are there for anyone who wants more work
 - Where jobs are scarce, stronger incentives to work don't create jobs (Phipps 1990, 1991)

A Simplified UI System

The book's example, over one year, with leisure measured in weeks:

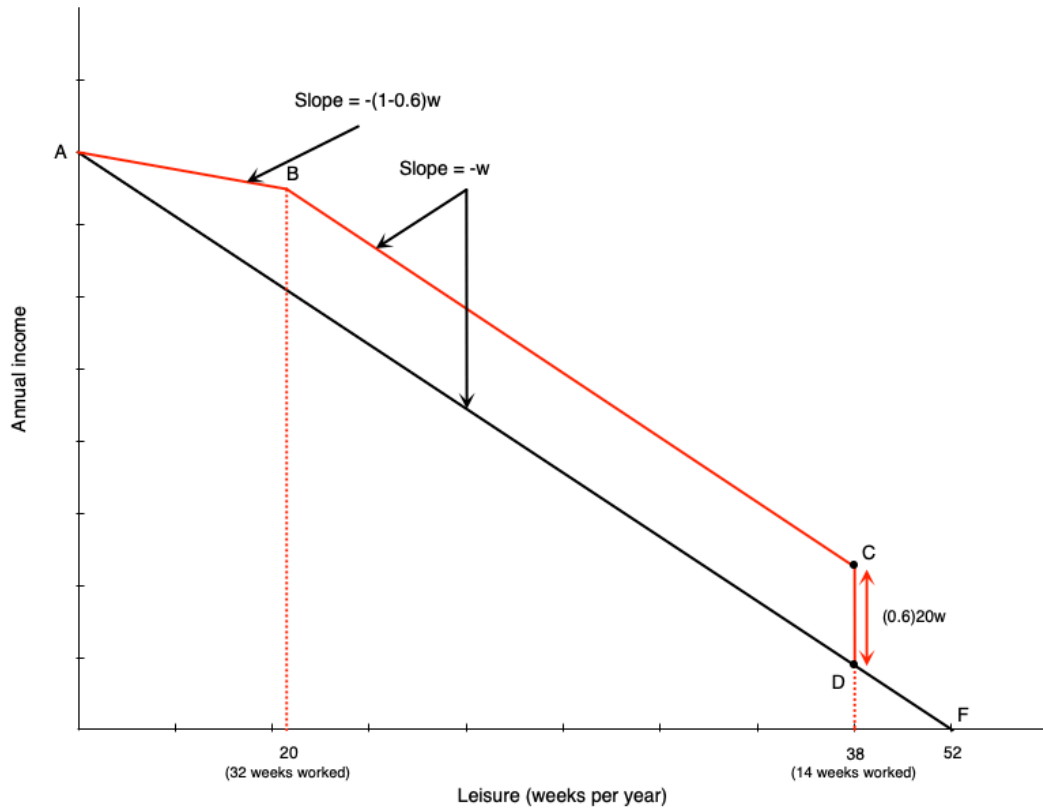
- Entrance requirement: 14 weeks of work
- Replacement rate: 60% of the weekly wage w
- Maximum duration: 20 weeks of benefits
- You can't work and collect in the same week

Work 14 weeks, then collect for 20:

$$Y = 14w + (0.6)20w$$

- Work up to 32 weeks and there are still 20 weeks left to collect
- Beyond 32 weeks, each extra week of work costs a week of benefits

UI: The Potential Income Constraint



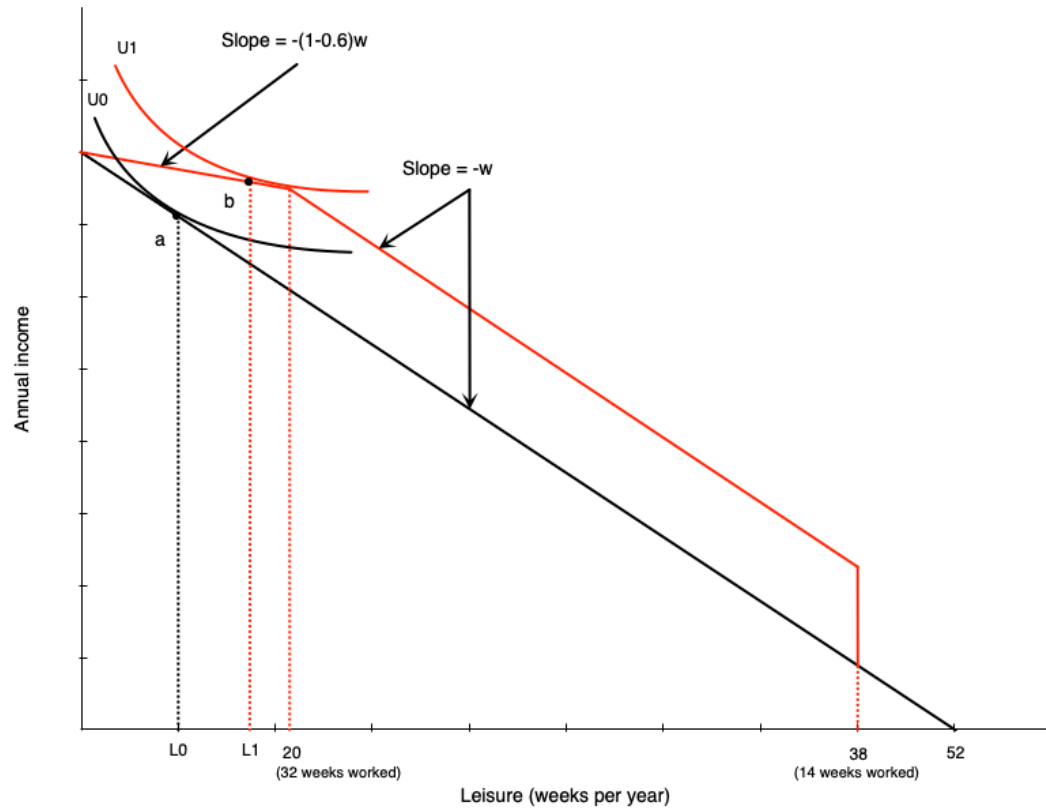
- AF: the constraint without UI, slope $-w$
- DF: fewer than 14 weeks of work, so no UI
- D to C: qualifying adds the full 20-week benefit, $(0.6)20w$
- CB: 14 to 32 weeks of work: full benefits, plus w for each extra week
- BA: past 32 weeks, a week of work earns w but gives up $0.6w$ of benefits
 - You keep only $(1 - 0.6)w = 0.4w$

iClicker Question

In the book's UI system (14-week ER, 60% replacement, at most 20 weeks of benefits), Sam earns $w = \$1,000$ a week. What is Sam's annual income from working 40 weeks?

- A) \$26,000
- B) \$40,000
- C) \$44,800
- D) \$47,200
- E) \$52,000

UI Effect: Working More Than 32 Weeks



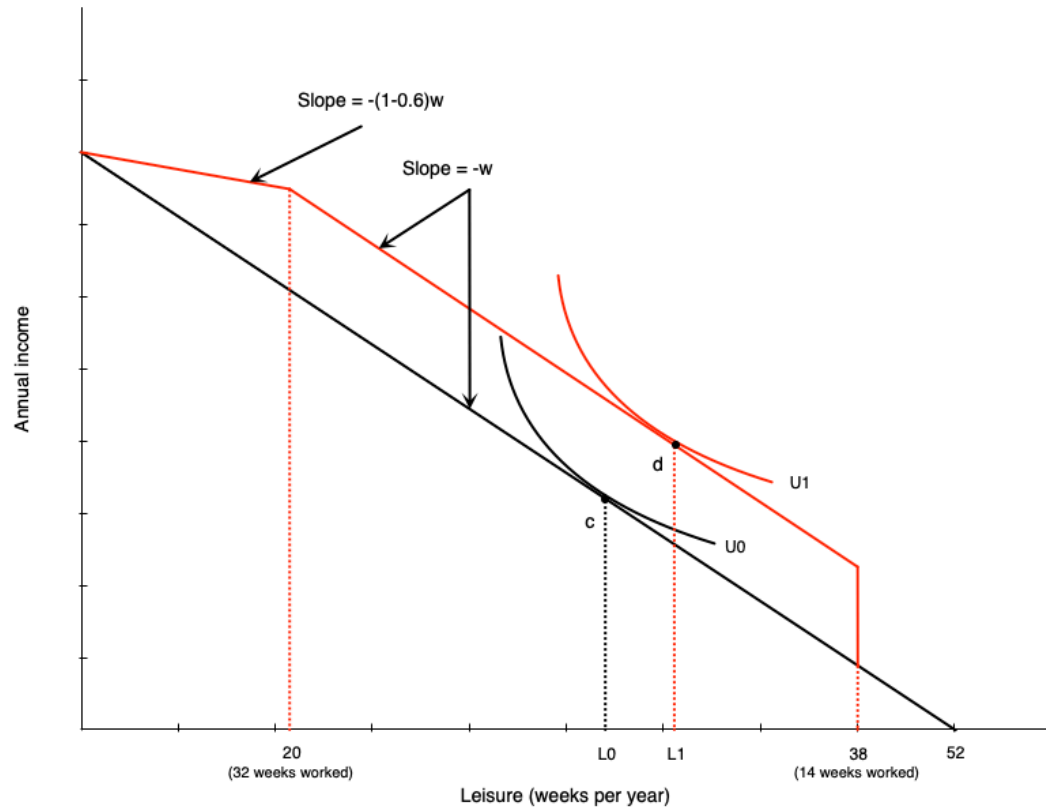
Someone who worked more than 32 weeks (at a):

- Now on segment BA: benefits raise income, and a week of work pays only $0.4w$
- Income effect $\rightarrow$ less work
- Substitution effect $\rightarrow$ less work
- Moves to b: fewer weeks of work, some weeks of UI

i Work Incentive Effect

Unambiguously negative

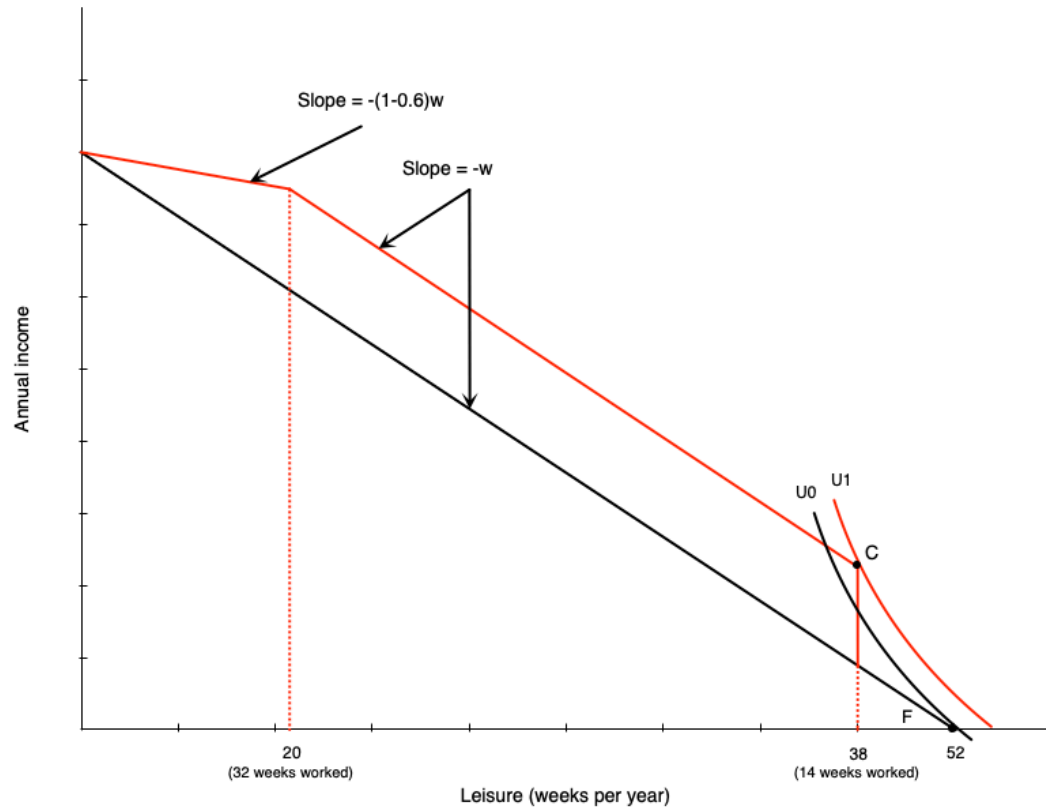
UI Effect: Working 14 to 32 Weeks



Someone who worked 14 to 32 weeks (at c):

- Already qualifies, and working a little more doesn't cut benefits
- The constraint shifts up in parallel: a **pure income effect**
- With leisure a normal good $\rightarrow$ fewer weeks of work (moves to d)

UI Effect: Non-Participants



Someone out of the labour force (at F):

- Values non-market time highly, so works zero weeks without UI
- Now 14 weeks of work brings a large jump in income
- Some will enter, work exactly 14 weeks, and collect (C)
 - Others will still stay out
- Same logic for anyone who worked fewer than 14 weeks (on DF)

i Work Incentive Effect

Participation **ris**es: UI draws people into the labour force

UI: What the Model Predicts

- UI **raises** work for some and **lowers** it for others
 - Out of the labour force, or below the ER → may work up to the ER
 - Above the ER → fewer weeks of work, more weeks of UI
- Both responses **raise the unemployment rate**
 - Weakly attached workers enter for short spells; strongly attached workers spend more weeks unemployed
- Strongest where seasonal and part-year work is common
- These effects are **potential**
 - Most workers never claim, and few would give up a good job for a few weeks of UI
 - The incentive bites for those with a job they can count on returning to, and for those laid off in a recession

iClicker Question

The book's UI system is introduced (14-week ER, 20 weeks of benefits). Who is most likely to work *more* weeks as a result?

- A) Dana, who works 45 weeks a year in a steady job
- B) Eli, who works 20 weeks a year in a seasonal job
- C) Fran, who worked 10 weeks last year on short contracts
- D) Gus, who works exactly 32 weeks a year
- E) None of them: UI only ever reduces work

Evidence: Maine vs. New Brunswick

! Key Definition

Natural experiment: a policy change or other event that affects one group but not another, comparable group, so that comparing them works like an experiment

- Kuhn & Riddell (2010) compare New Brunswick and Maine, 1940–1991
 - Similar economies, labour forces, and industries
 - Similar UI programs, and similar rates of part-year work, before 1950
- New Brunswick's UI became much more generous in the 1950s and again in the 1970s; Maine's barely changed
- Maine shows what New Brunswick would have looked like without the expansions
 - A before-and-after comparison against a control group, like **difference-in-differences** in Chapter 2

Maine vs. New Brunswick: Results

Weakly attached workers:

- More participation, and more part-year work
- The $F \rightarrow C$ move from the diagram

Strongly attached workers:

- Less work, and more part-year work
- The $a \rightarrow b$ and $c \rightarrow d$ moves

By 1990:

- Part-year work among working-age men: 13% in northern Maine, 26% in New Brunswick
- More than 75% of that gap comes from New Brunswick's more generous UI
- New Brunswick's unemployment rate **rose substantially** as a result

Key Result

Both responses the model predicts show up in the data

Bunching at the Entrance Requirement

- The model predicts **bunching**: many jobs lasting exactly as long as the ER
- In Canada the ER varies by region with the local unemployment rate
 - **Variable entrance requirements (VERs)** are *lower* where unemployment is higher
- Christofides & McKenna (1996): job durations bunch at each region's own ER
- But causation could run backwards
 - The VER is set from local labour market conditions, which reflect how long jobs last

iClicker Question

Which comparison would give the most credible test of whether the entrance requirement changes how long jobs last?

- A) Job durations across regions with different ERs, in the same year
- B) Job durations in one region, before and after its ER fell because its unemployment rate rose
- C) Regions where a national change, unrelated to local conditions, raised the ER a lot, against those where it barely changed
- D) A survey asking workers whether they timed the end of their job to qualify for UI
- E) Job durations of UI claimants compared with those of workers who never claim

1990: An Accidental Experiment

- Unless the Senate renewed them by January 1990, the VERs would revert to 14 weeks everywhere
- The Senate and the House of Commons were fighting over the GST, and the bill stalled
- For most of 1990, every region had a 14-week ER
 - A large increase for the high-unemployment regions
- Green & Riddell (1997) and Baker & Rea (1998): job durations shifted with the new ER

Key Result

Labour supply responds to the details of UI design, not just to how generous it is

Working While on Claim

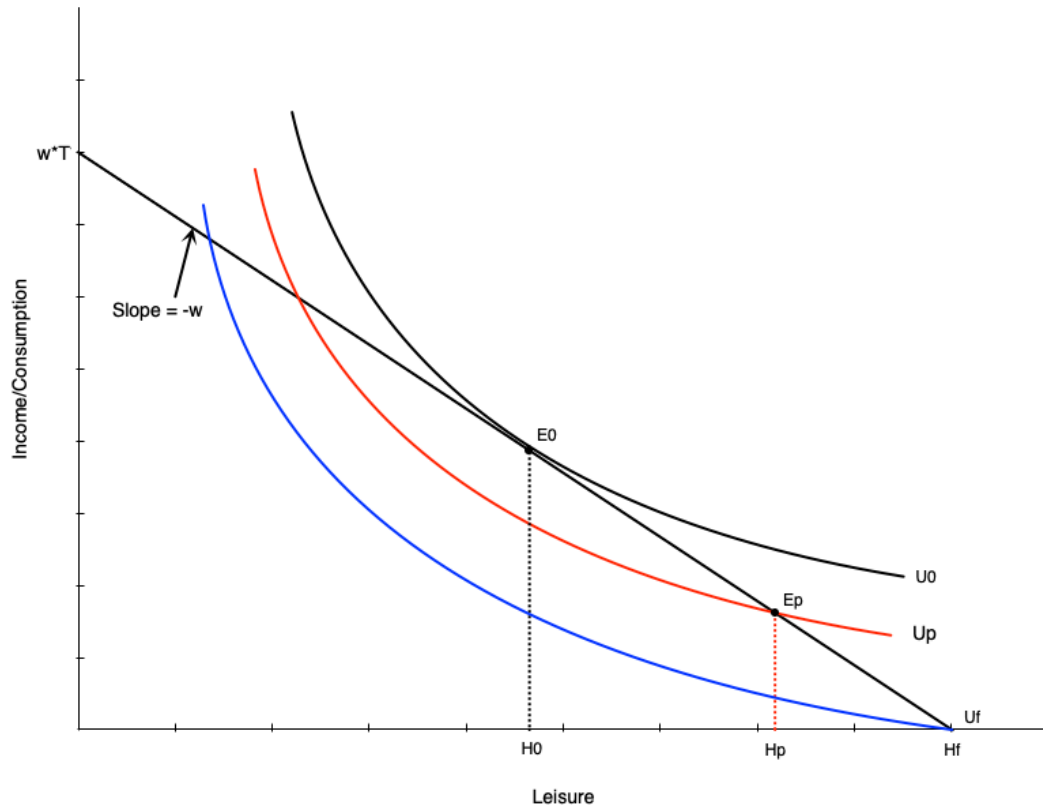
- Lluís & McCall (2019) study EI pilot projects in the 2000s
 - In some provinces, claimants could earn more while on claim without losing benefits
- More **marginal employment**: claimants took more part-time and temporary work
- But **worse job search**: more time on passive methods like reading job ads, less on contacting employers or former coworkers
- The potential income constraint can't see job search at all

Illness and Disability Insurance

Disability and Work Incentives

- Many programs replace income lost to disability
 - Workers' compensation, public and private disability pensions, long-term disability insurance, and court awards for personal injury
- Often, work incentives don't matter at all
 - Benefits are paid precisely because the disability prevents work
- Sometimes people do have a choice: whether to work, how much, or when to go back
 - Then the program's incentive effects are a [legitimate policy concern](#)

Disability That Limits Hours



Before: choose E_0 , working H_0 hours, on U_0
Partial disability: can work at most H_p hours

- Same wage, but only the segment from E_p to H_f is available
- Best choice is E_p , on a lower curve U_p

Full disability: no work possible

- Stuck at H_f with no earnings, on U_f

Medical Costs and Lower Wages

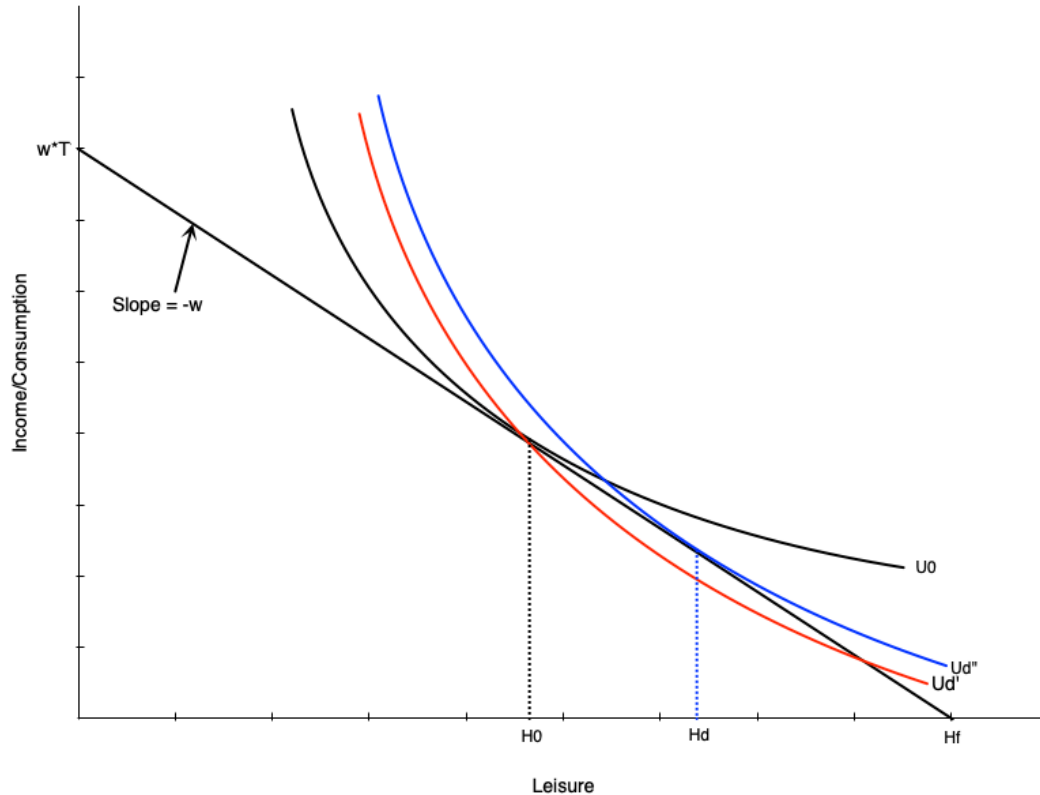
Medical expenses

- Cut income by the same amount at every level of hours, like losing non-labour income
- The constraint shifts down in parallel: a **pure income effect**
- With leisure a normal good → more hours of work

A lower wage

- A disability can also reduce what someone earns per hour
- A flatter constraint: income and substitution effects pull in opposite directions
- Effect on hours is **ambiguous**

Disability That Makes Work Harder



- Constraint unchanged: same wage, same hours available
- But work is now harder relative to other activities
- Indifference curves get **steeper**: it takes more income to make up for an hour of work
 - U'_d is the new curve through the old choice
- A substitution toward non-market time: hours fall from H_0 to H_d

i In Practice

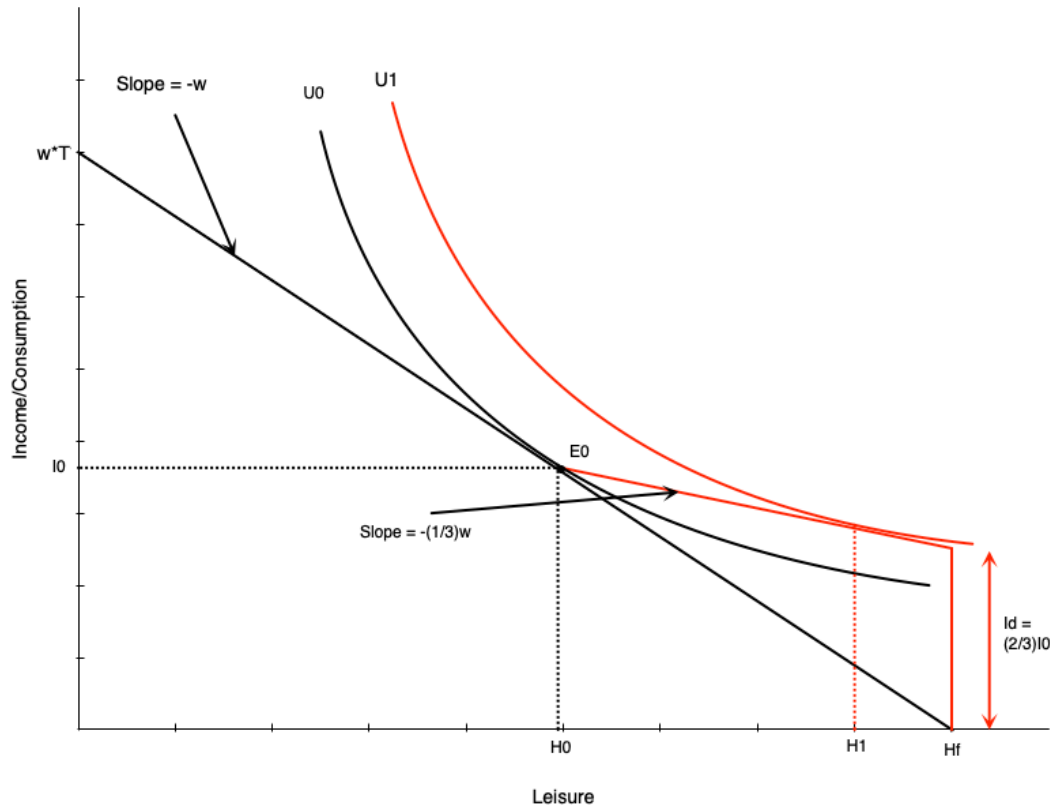
A real disability often combines all four effects: fewer possible hours, a lower wage, medical costs, and harder work

iClicker Question

Jordan's injury leaves the wage and possible hours unchanged, but adds \$400 a month in physiotherapy costs. The province then starts covering those costs, whatever Jordan's hours. With leisure a normal good, compared with just before the province covers them, Jordan's hours of work:

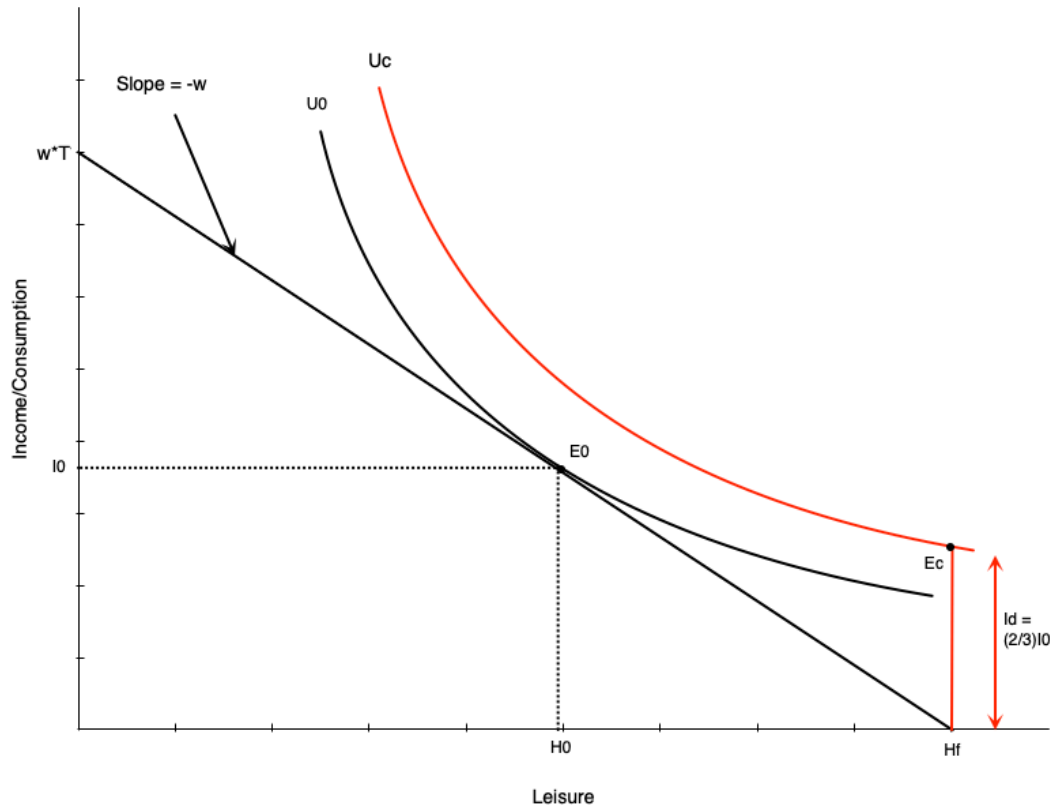
- A) Fall, through a pure income effect
- B) Rise, because Jordan can now afford to work more
- C) Are ambiguous, because the income and substitution effects pull in opposite directions
- D) Don't change, because the wage hasn't changed
- E) Fall, through a substitution effect

Workers' Compensation: The Constraint



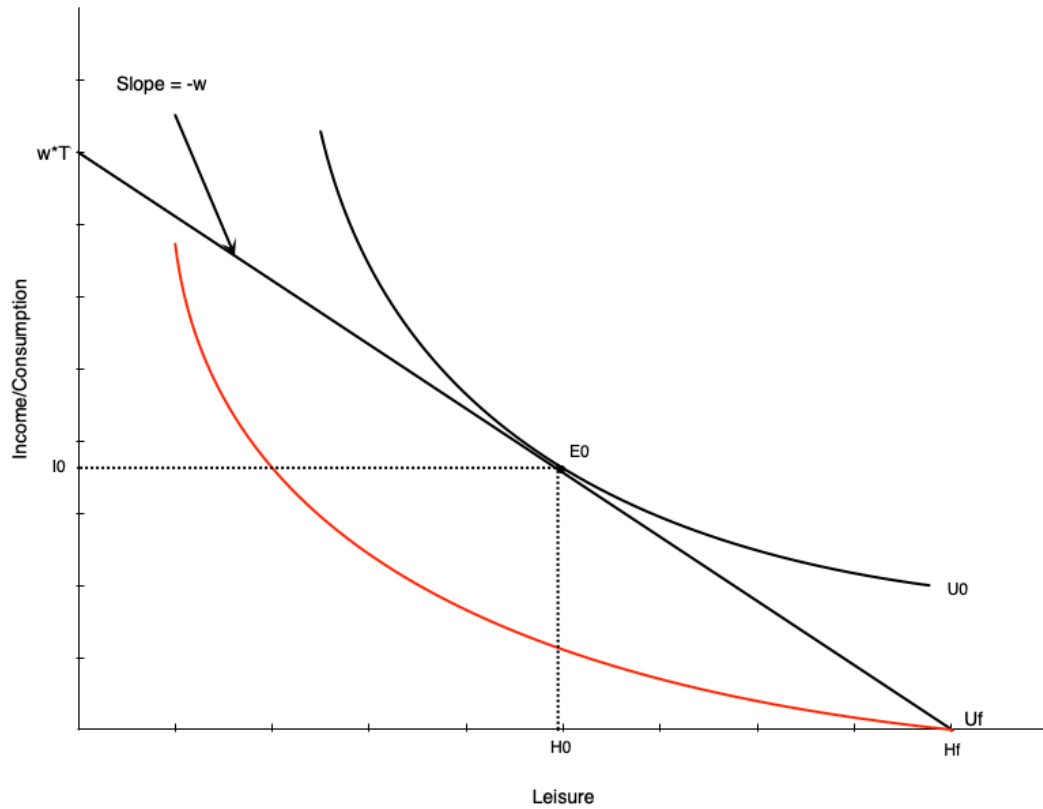
- Suppose it pays two-thirds of lost earnings: at full disability, $I_d = \frac{2}{3}I_0$
- Each hour worked earns w but cuts benefits by $\frac{2}{3}w$
 - Net gain from an hour of work: $\frac{1}{3}w$
- The same shape as a negative income tax from Chapter 4
 - Income effect $\rightarrow$ less work
 - Substitution effect $\rightarrow$ less work
- Someone free to choose their hours moves from H_0 to H_1

When Compensation Is All or Nothing



- The full constraint assumes partial disabilities get partial compensation
- If only proven **full disability** is compensated, there are two choices: E_0 (work as before) or E_c (stop and collect)
- Here $U_c > U_0$: the worker is better off not working
 - Working pays more, but not enough to make up for the effort of working
- **No incentive to return to work**, even where it is possible

The Cost of Not Compensating

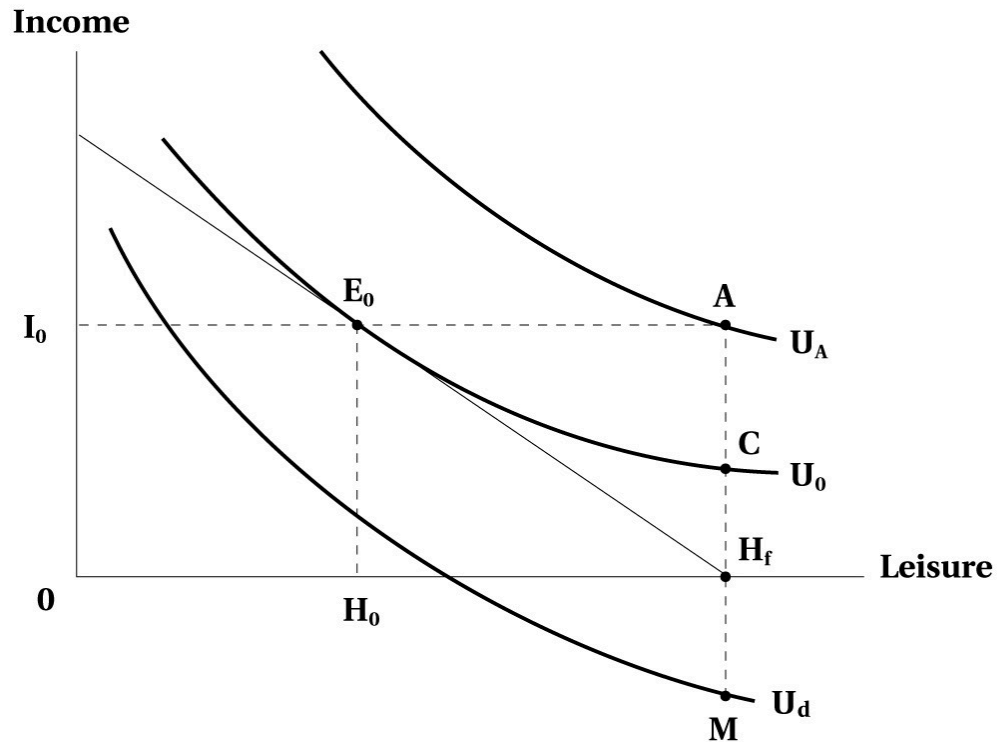


- With no compensation, someone who truly can't work falls to U_f at H_f
- Cutting benefits until $U_c < U_0$ would bring back those able to work...
- ...but it penalizes those who can't
- With medical costs, and pain and suffering, replacing lost earnings rarely leaves anyone better off than before the injury

i The Policy Trade-off

Compensate those who need it, while keeping an incentive to return to work where that is feasible

Restoring Income or Restoring Utility



Source: Benjamin et al. (2026), Figure 5.3(c)

- A fully disabling injury: no work, plus medical costs $H_f M$
- Utility falls from U_0 to U_d
- Restore income: pay lost earnings AH_f plus medical costs $H_f M$, an award of AM
 - Utility $U_A > U_0$, because there is no work to do: overcompensated, ignoring pain and suffering
- Restore utility: pay CM , back to U_0
 - But AC , the income they'd have given up to stop working, can't be observed

iClicker Question

Kim and Lee suffer the same fully disabling injury, with the same lost earnings and the same medical costs. Before the injury, Kim would have accepted a much lower income in exchange for not working; Lee would have accepted only a slightly lower one. A tribunal awards each of them lost earnings plus medical costs (AM). Ignoring pain and suffering:

- A) The award restores both to their pre-injury utility
- B) Kim is overcompensated by more than Lee
- C) Lee is overcompensated by more than Kim
- D) Both are left worse off than before, because of the medical costs
- E) Both are overcompensated by the same amount, since their lost earnings are equal

Evidence on Workers' Compensation

- Hard to measure: if fitness to work is assessed strictly and accurately, incentives don't matter
 - Where disability is hard to assess, program effects mix with local job prospects
- Most research studies **claims**: how often, how long, what kind (Fortin & Lanoie 2000)
 - Program design affects how safely workers and firms behave, and whether accidents get reported
 - Some substitution between EI and workers' compensation
- Biddle & Roberts (2003): in Michigan, more generous benefits made eligible workers more likely to file a claim
- Hyatt (1996): before 1990, Ontario paid lump sums for permanent partial disabilities, based on the injury and not on later earnings
 - A pure income effect: more generous awards made work after the injury less likely

Evidence on Disability Insurance

- Around the world, disability insurance can be a [pathway to retirement](#) (Coile et al. 2016)
- C/QPP disability gives weaker incentives than most (Milligan & Schirle 2016)
 - Less generous, strict medical tests, and it converts to a pension at 65
- Campolieti & Riddell (2012): CPP disability added an earnings exemption; QPP did not
 - More CPP beneficiaries worked, with no change in how many received benefits
- Milligan & Schirle (2019), Canada vs. the United States
 - Both the [pull](#) of generous benefits and the [push](#) of worsening wages drive take-up
 - Together they help explain the large rise in US disability claims

Summary

Summary

Social insurance programs:

- Insure against income lost to job loss, illness, and injury
- Pay according to past contributions and work history, not current need

Work incentives:

- Matter only when people have a choice about how much to work
- EI raises work for some, up to the entrance requirement, and lowers it for others
- Disability programs can discourage a return to work, especially with high replacement rates

Setting compensation:

- Restoring income can overcompensate; restoring utility needs something nobody can observe

Evidence:

- Natural experiments show people respond to the details of program design

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