

26<sup>th</sup>

**REVES**  
NETWORK ON HEALTH EXPECTANCY  
RESEAU ESPÉRANCE DE VIE EN SANTÉ

**MEETING**  
**Edinburgh 2014**

# Cohort Differences in Work Disability

Dr. Sandra L. Reynolds

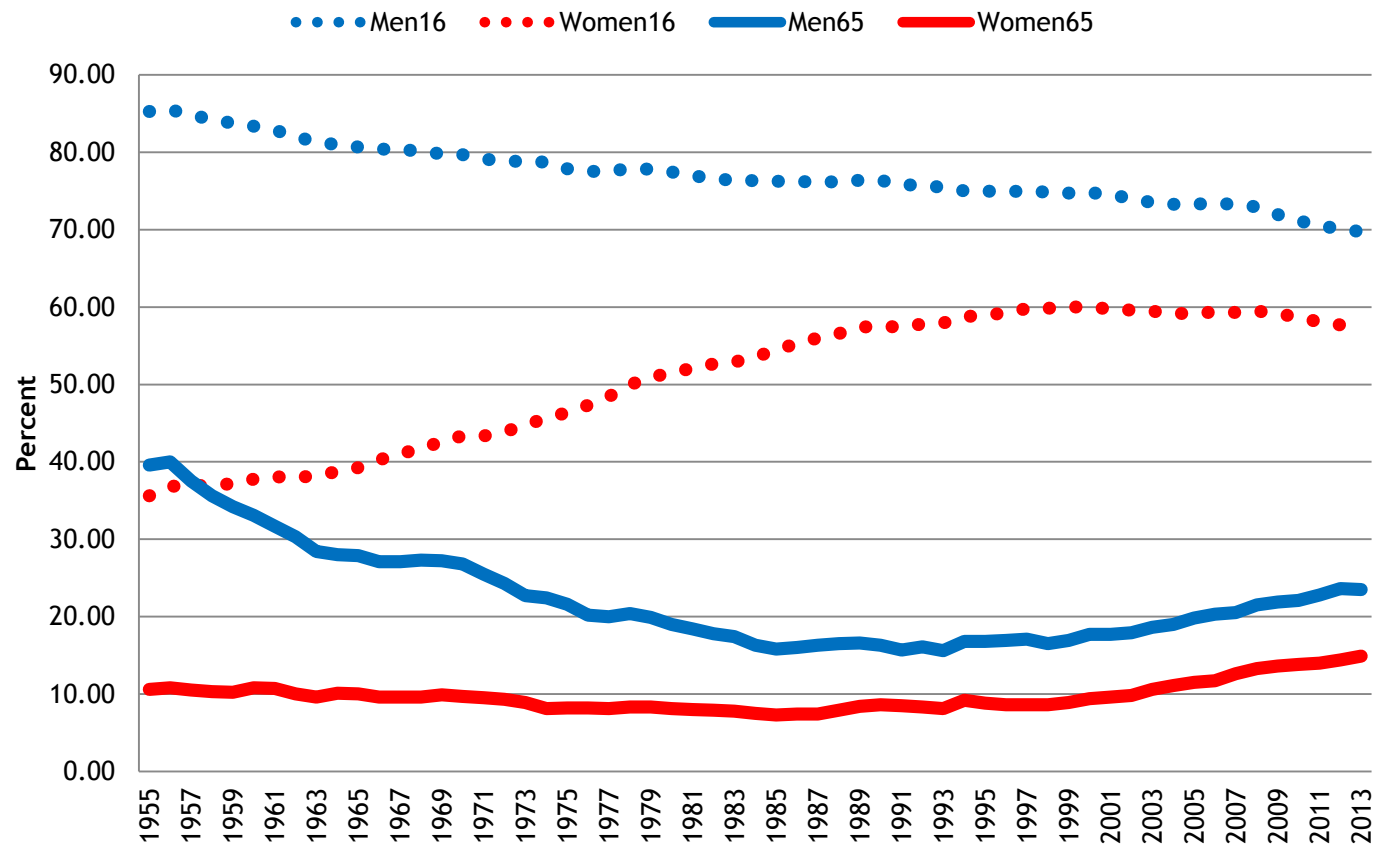
**USF** UNIVERSITY OF  
SOUTH FLORIDA  
COLLEGE OF BEHAVIORAL  
& COMMUNITY SCIENCES



# Overall Issue

- Are there cohort differences in the ability to work longer?
  - What is the relative importance of broad social change, cohort-specific change, and population composition on these differences?
- Background
  - Trends in LFPRs
  - Trends in Self-Reported Work Disability

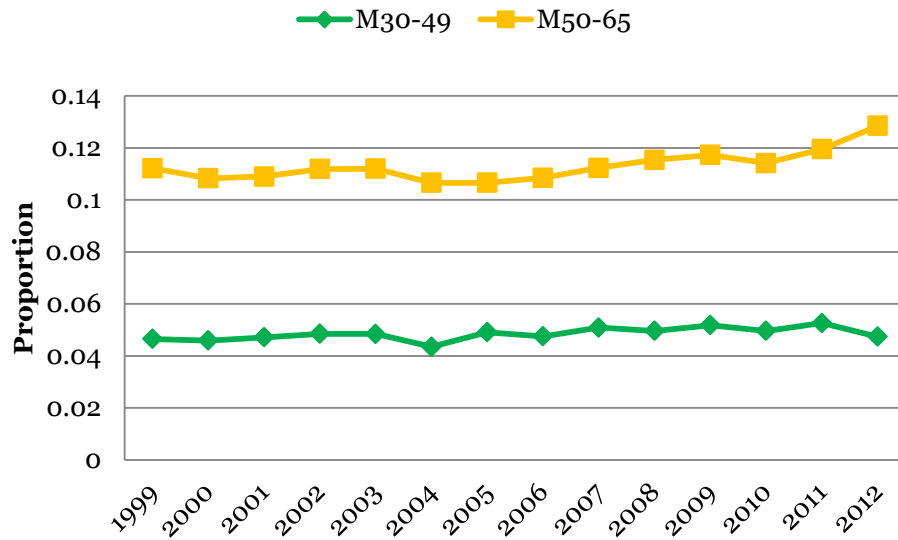
# Trends in Labor Force Participation, 1955-2013: Men & Women 16+ and 65+



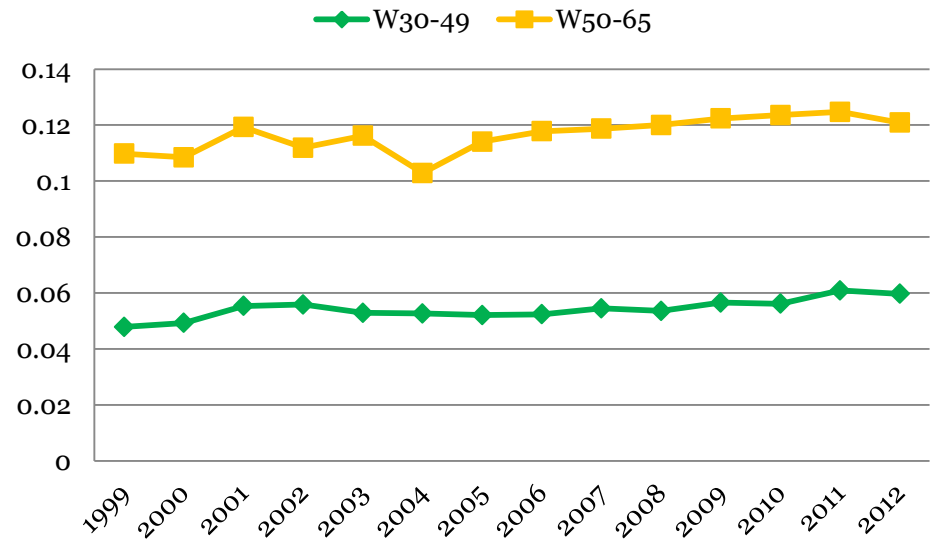
BLS, 2013

# Time Trends in Work Disability, 1999-2012

## Men, Ages 30 to 49, and 50 to 65



## Women, Ages 30-49 and 50-65



Source: NHIS, 1998 - 2012

# Methods

- Data:
  - NHIS, 1998 – 2012
  - Adults aged 30-65
  - N= 559,786;
    - 269,467 Male
    - 290,319 Female
- Organized into 16 cohorts
  - 3-year centered
  - e.g., 1935 cohort = 1934, 1935, 1936

# Measures

- **Work Disability:**
  - Positive response to Work Status = Disabled
- **Age**
  - Linear
  - Quadratic
- **Subpopulations:**
  - Male, Female
  - White, Black, Hispanic
  - Low Education (LTHS)

# Statistical Analysis

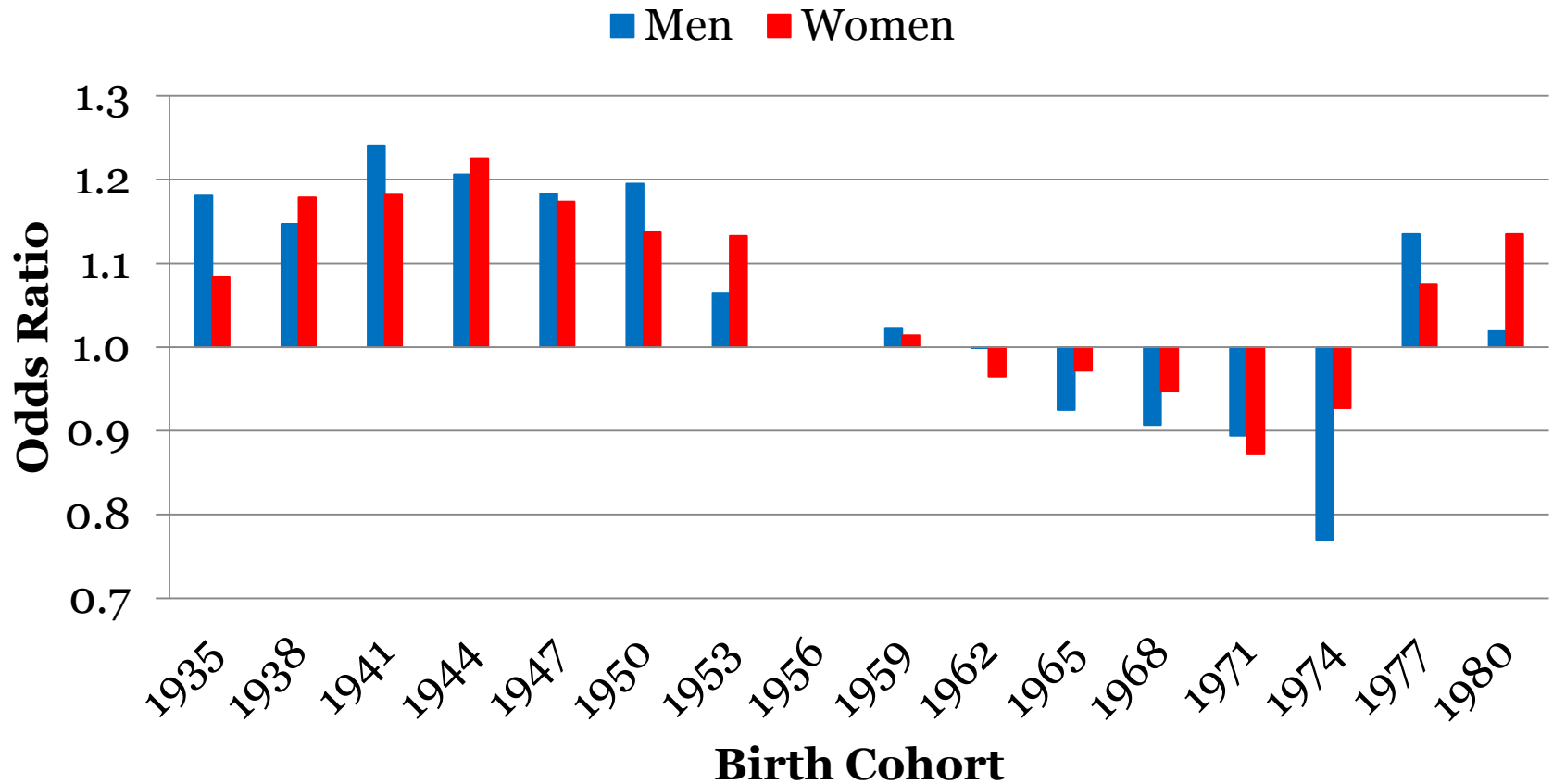
- Logistic Regression on the Probability of Reporting Work Disability
- By Age and Cohort, with 1956 cohort @ omitted category

$$\ln(p/1-p) = \alpha + \beta_1 \text{ Age} + \beta_2 \text{ Age}^2 + Z_i \text{ Cohort}_i \\ i = (-7 \text{ to } +8)$$

- Hierarchical Individual Analysis:
  - Cohort, Demographics, Interactions

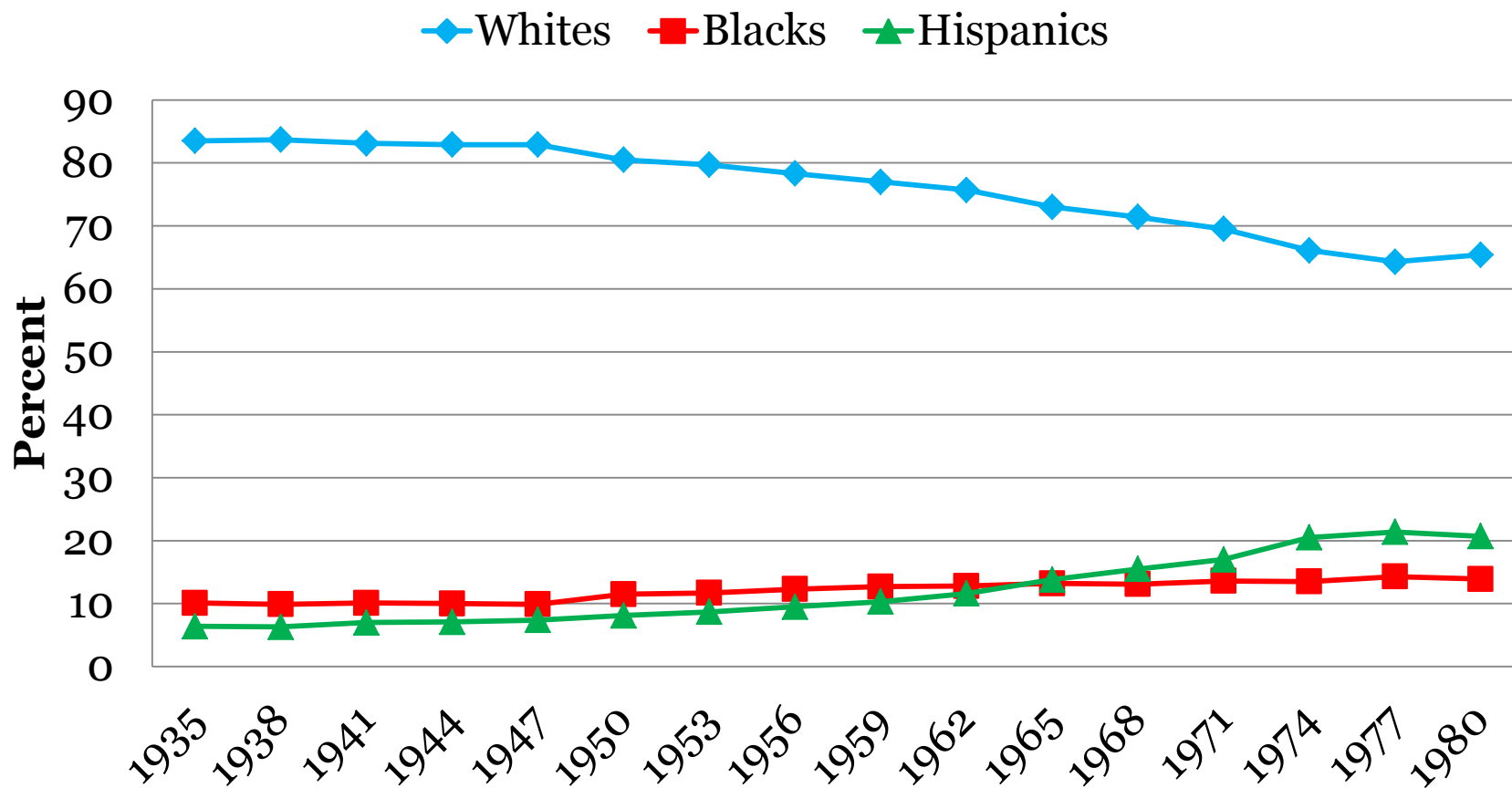
*All Weighted to reflect US population*

# Odds-Ratios for Work Disability: Birth Cohorts in Comparison to 1956 Cohort



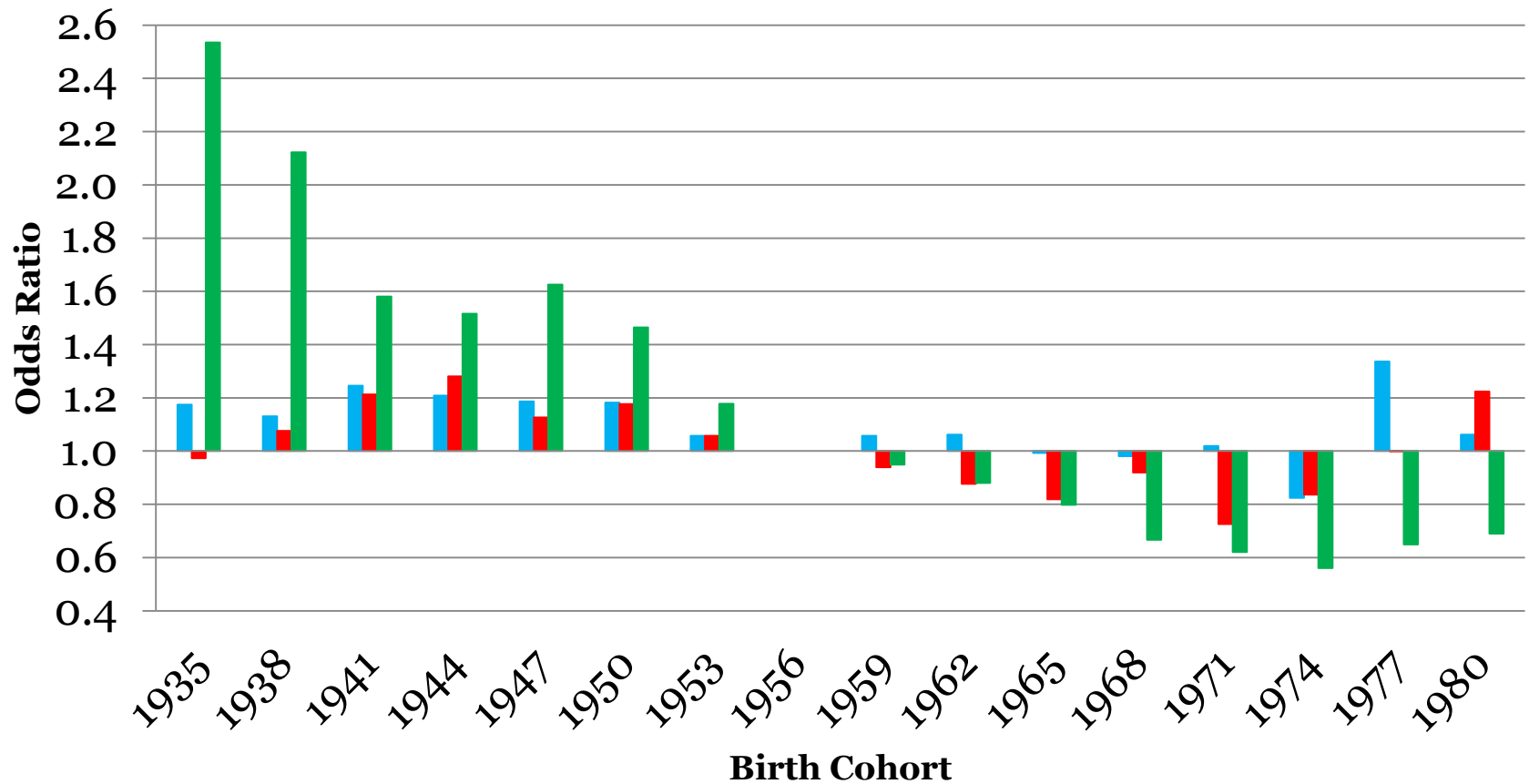


# Trends in Cohort Race/Ethnic Composition

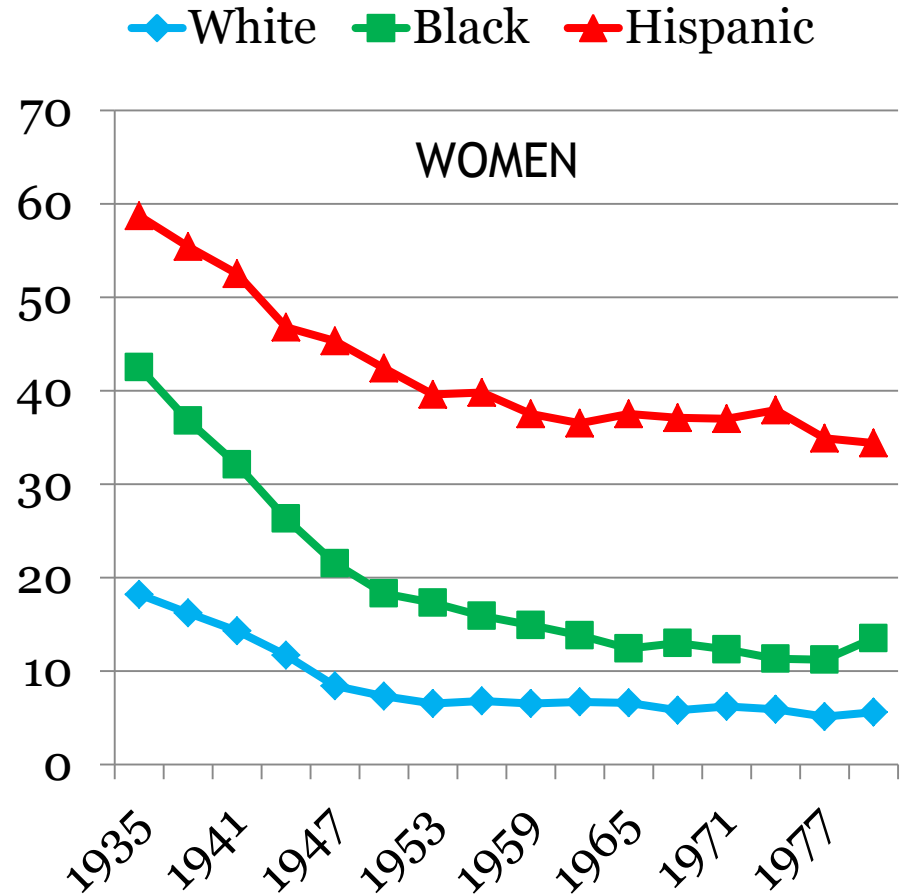
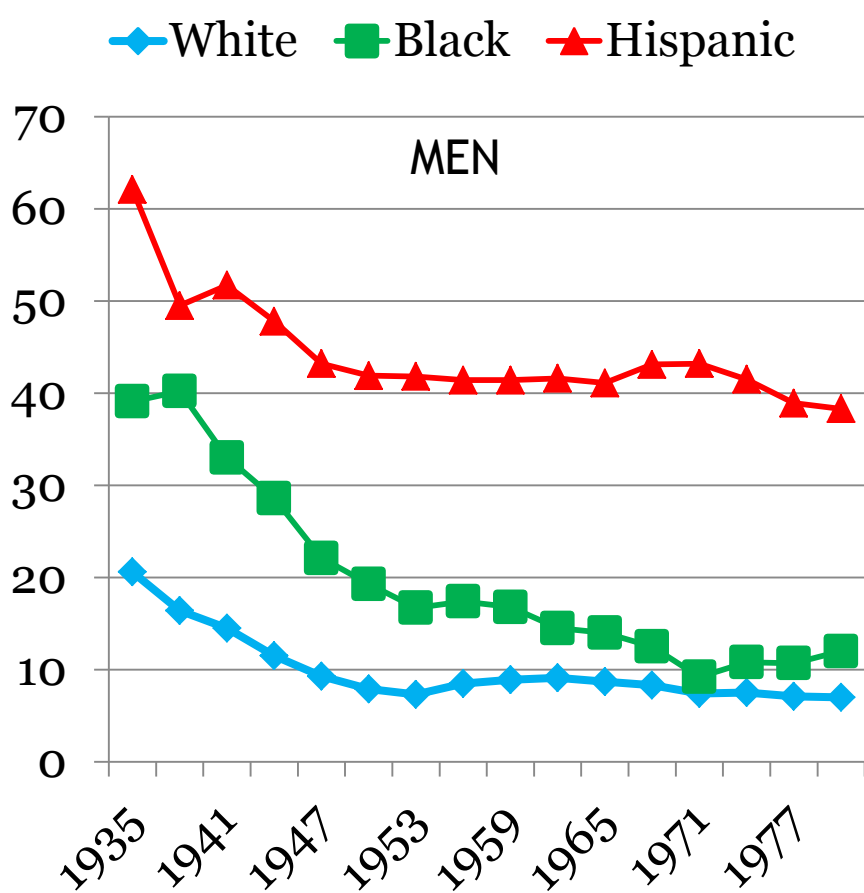


# Odds-Ratios for Work Disability: Birth Cohorts of Men in Comparison to 1956 Cohort

■ White ■ Black ■ Hispanic

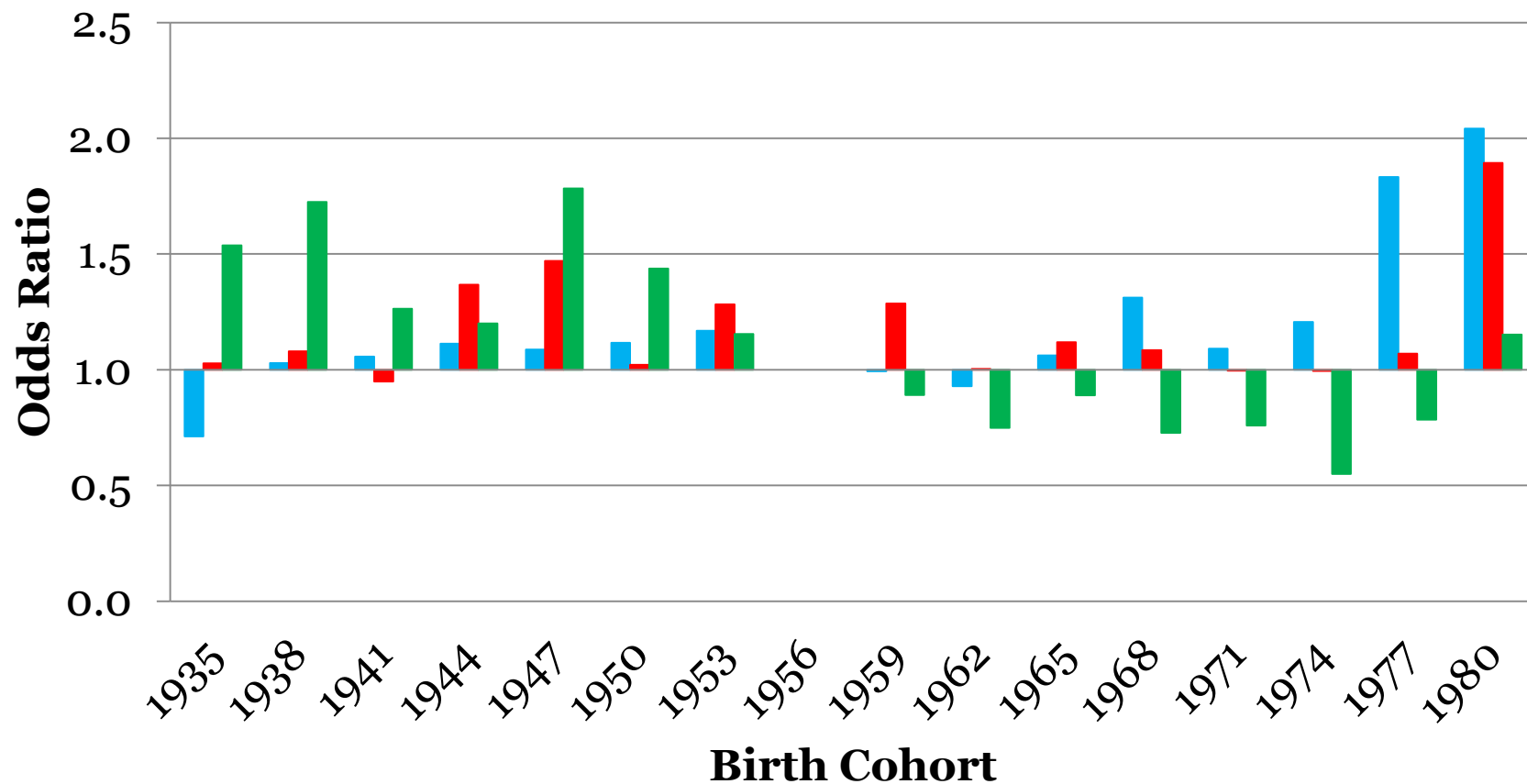


# Cohort Trends in Low Education

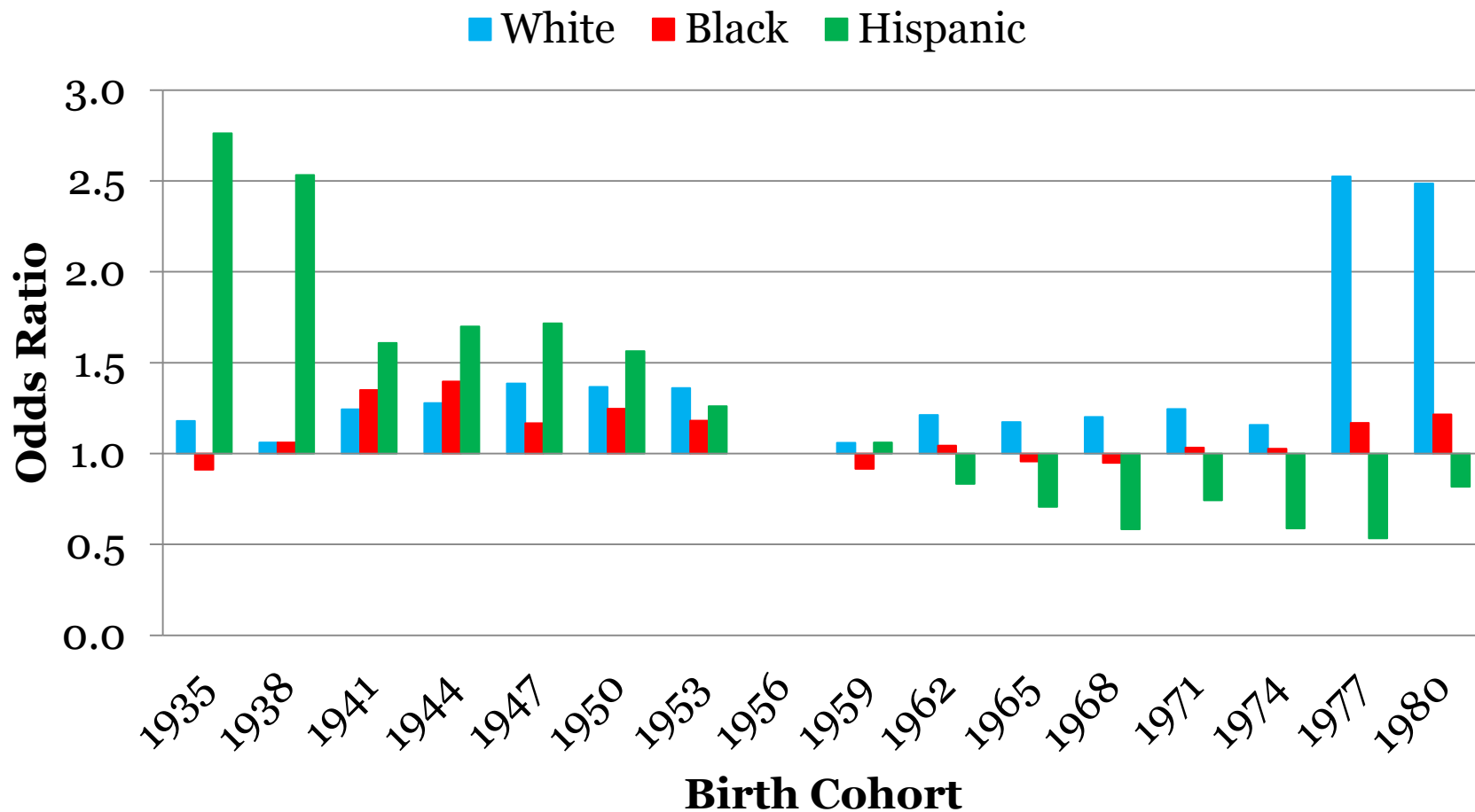


# Odds-Ratios for Work Disability: Birth Cohorts of Low Education Women: White, Black, and Hispanic in Comparison to 1956 Cohort

■ White ■ Black ■ Hispanic



# Odds-Ratios for Work Disability: Birth Cohorts of Low Education Men: White, Black, and Hispanic in Comparison to 1956 Cohort



# Summary

- Some evidence of “broad population change”
  - Higher levels of disability in earlier-born cohorts
  - Lower levels in later-born cohorts
- Evidence of cohort-specific effects?
  - Latest-born – higher levels – why?
- Several differences by Population Composition
  - Differences between Men and Women
  - Differences by Race/Ethnicity
  - Education – the broadest population change

Individual Level Results of  
Probability of Reporting Work Disability  
(Cohorts ranging from -7 to +8 with 1956 set at 0)

	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>	<b>Model 4</b>	<b>Model 5</b>
Cohort OR	0.991	0.990	0.989	1.006	1.008
Low Education					
Cohort X Low Education					
UnweightedAdjR <sup>2</sup>	.0424	.0427	.0556	.0937	.0987

M1: Age, Age<sup>2</sup>, Cohort

M2: add Female

M3: add Black, Hispanic

M4: add Low Education

M5: add Low Education X Cohort

Individual Level Results of  
Probability of Reporting Work Disability  
(Cohorts ranging from -7 to +8 with 1956 set at 0)

	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>	<b>Model 4</b>	<b>Model 5</b>
Cohort OR	0.991	0.990	0.989	<b>1.006</b>	1.008
Low Education	---	---	---	<b>3.791</b>	
Cohort X Low Education	---	---	---	---	
UnweightedAdjR <sup>2</sup>	.0424	.0427	.0556	.0937	.0987

M1: Age, Age<sup>2</sup>, Cohort

M2: add Female

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M4: add Low Education

M5: add Low Education X Cohort



Individual Level Results of  
Probability of Reporting Work Disability  
(Cohorts ranging from -7 to +8 with 1956 set at 0)

	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>	<b>Model 4</b>	<b>Model 5</b>
Cohort OR	0.991	0.990	0.989	1.006	1.008
Low Education	---	---	---	3.791	3.793
Cohort X Low Education	---	---	---	---	0.995
UnweightedAdjR <sup>2</sup>	.0424	.0427	.0556	.0937	.0987

M1: Age, Age<sup>2</sup>, Cohort

M2: add Female

M3: add Black, Hispanic

M4: add Low Education

M5: add Low Education X Cohort

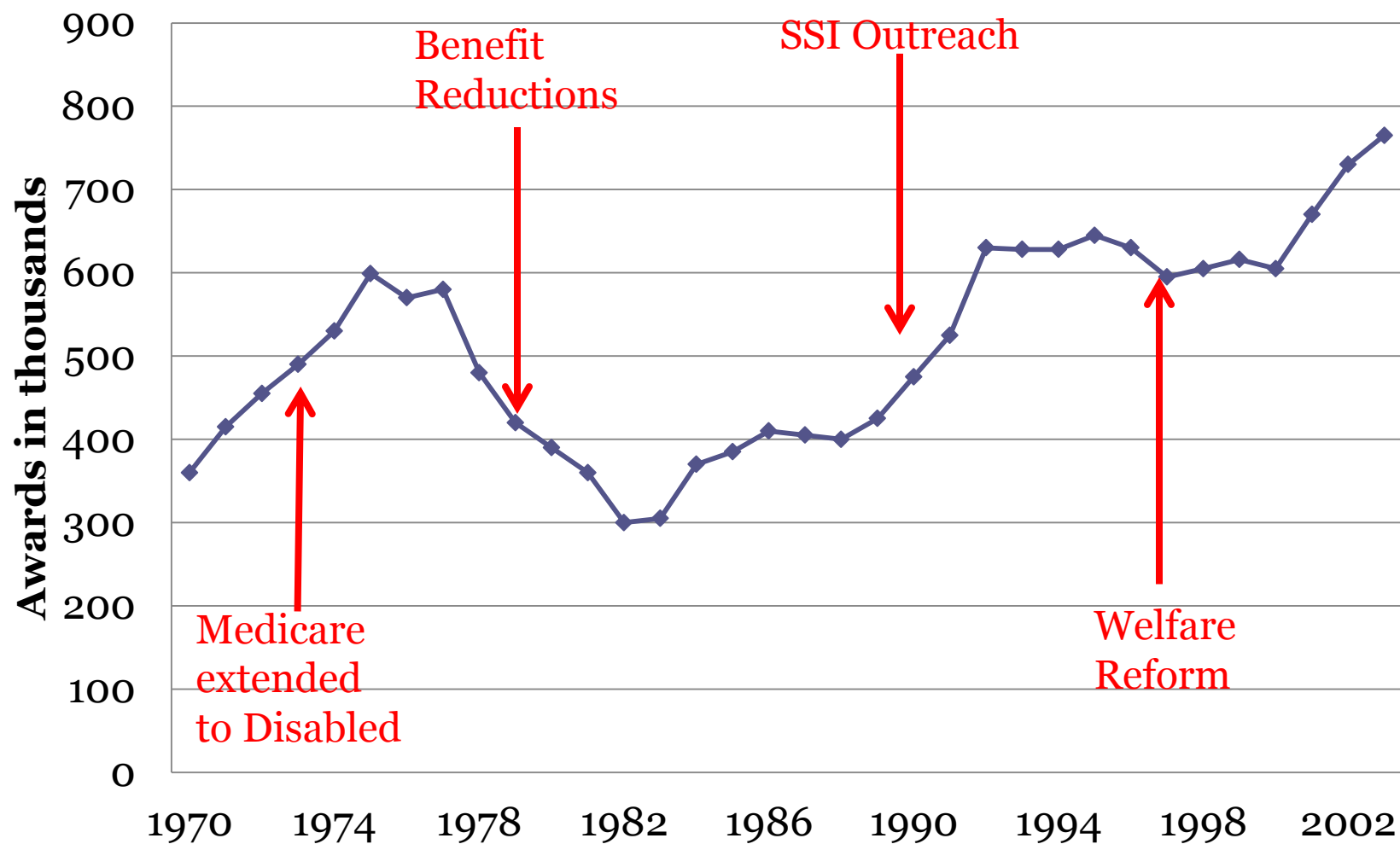
# Summary

- Individual Analysis –
  - Gender and Race – successively born cohorts have lower LL of Work Disability
  - Low Education – reverses cohort effect – higher LL of Work Disability
  - Interaction between Low Education and Cohort:
    - Each successively born cohort has higher LL of Work Disability
    - Those with Low Education have much higher LL of Work Disability
    - BUT – Each Successively born Low Educated Cohort has lower likelihood of Work Disability

# Lingering questions:

- What changed for cohorts born 1956-1959?
  - Better health care?
  - Possibly change in SSDI qualifications
  - 1956-1959 cohorts – enter workforce in 1976-1979
  - During that period, SSDI awards reversed
- Why higher levels of disability in latest born – anomaly or cause for concern?

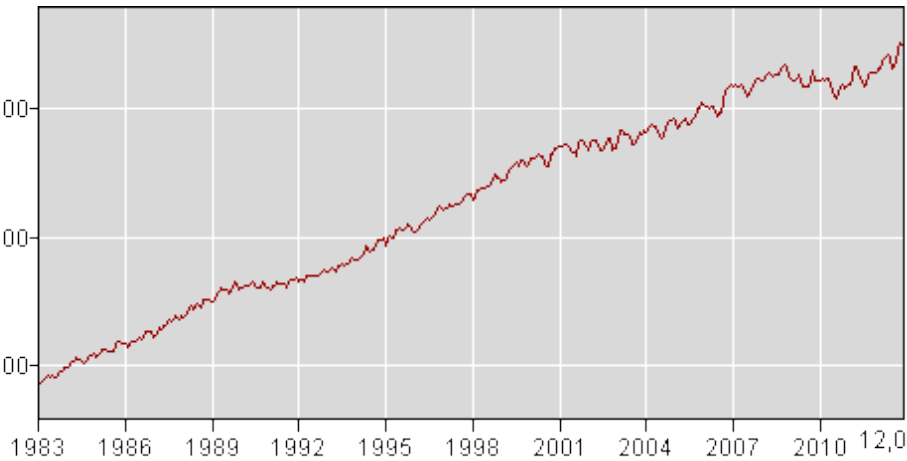
# Changes in # Disability Awards 1970-2003



Source: Social Security Administration, 2006

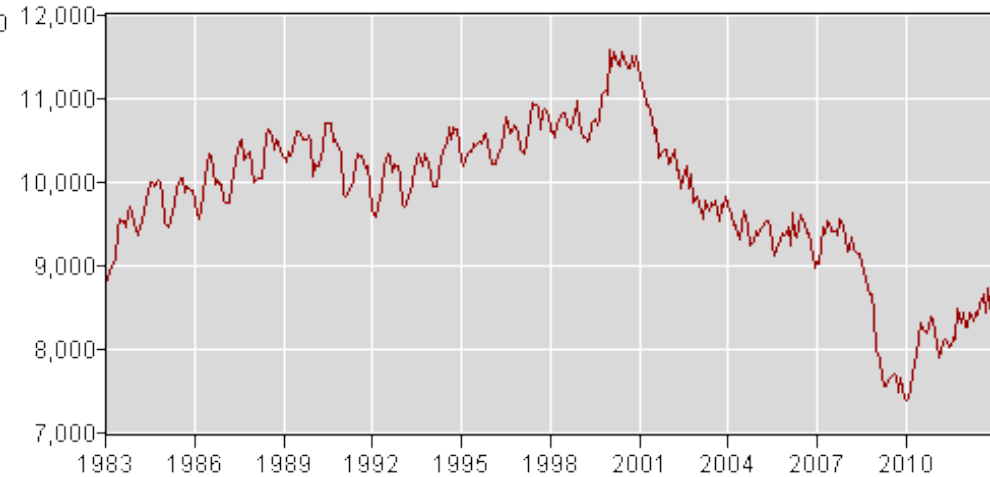
# Why lower levels of disability in later born Low Education cohorts?

Possibly different composition of occupations!



Manager/Professional Jobs

Manufacturing Jobs



# Conclusions

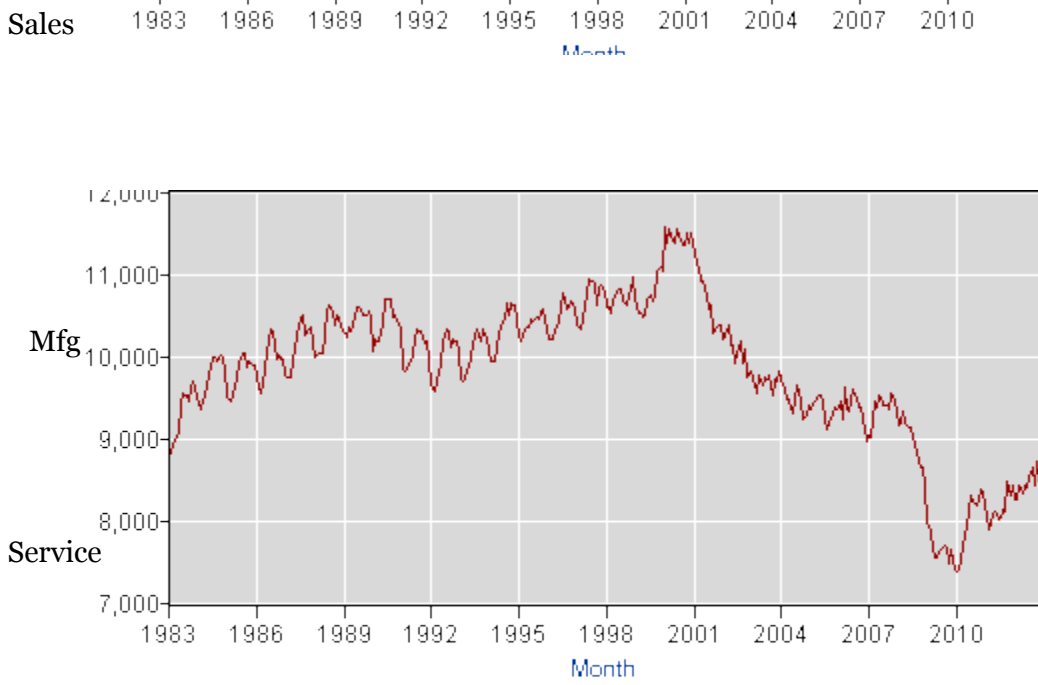
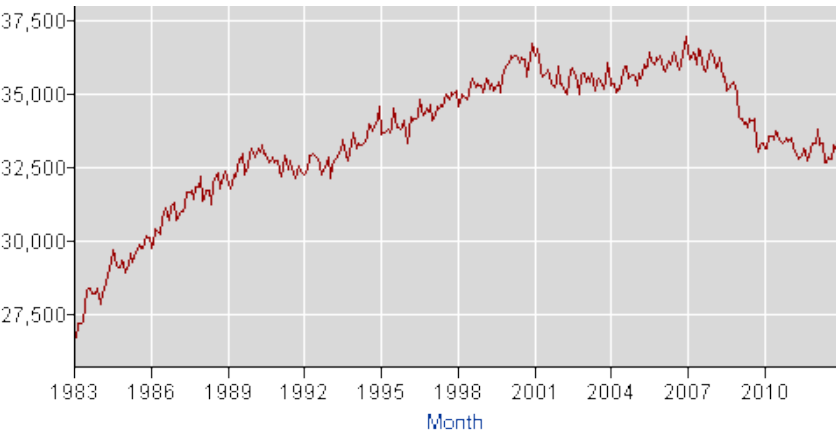
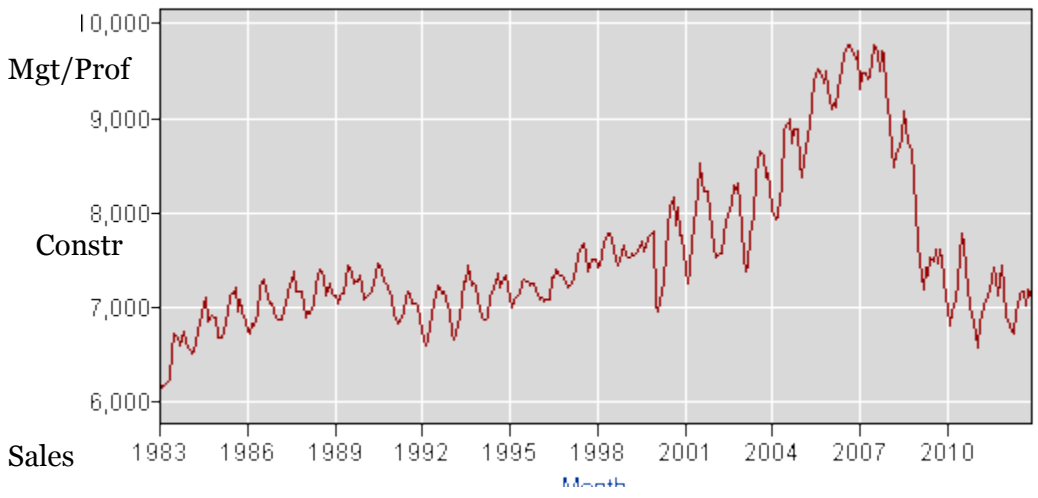
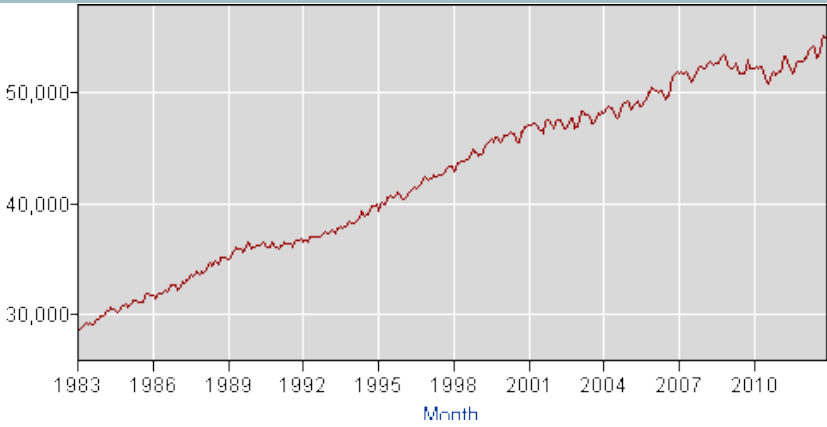
- Education is the BIG Kahuna (broad population change)
- Changes in SSDI qualifications appear to have a real effect on reported Work Disability (cohort-specific ?)
- Population composition effects – prevalence of Hispanics (immigration status?)

Thank you!



3-year cohorts															
	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
1935	63	64	65												
1938	60	61	62	63	64	65									
1941	57	58	59	60	61	62	63	64	65						
1944	54	55	56	57	58	59	60	61	62	63	64	65			
1947	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65
1950	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62
1953	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59
1956	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56
1959	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53
1962	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
1965	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
1968	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
1971	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
1974						29	30	31	32	33	34	35	36	37	38
1977						26	27	28	29	30	31	32	33	34	35
1980									26	27	28	29	30	31	32





## Women's LFPR (Red) and Odds Ratios for the Probability of Work Disability Compared to 1935 cohort (Blue)

— LFPR    — WorkDis (ORs)

