

David S. Gibson

# Improving Occupation Earnings Estimates Through Segregation of Education Levels

# Agenda

- ◆ Purpose / approach
- ◆ Earnings results
- ◆ Prevalence results



# Purpose



- ◆ Earnings by occupation broad usage
- ◆ Recognize diverse background within occupation
- ◆ Segregate by highest education
- ◆ Improve predictions

# Approach



- ◆ Workers
  - ◆ Year-round, full-time
  - ◆ 25-64
- ◆ Earnings
  - ◆ Wages, tips, bonuses
  - ◆ Self-employed
- ◆ Education levels
  - ◆ Less than high school
  - ◆ HS diploma or equivalent
  - ◆ College less than bacc.
  - ◆ Baccalaureate
  - ◆ Masters
  - ◆ Ph.D. or professional

# ACS Surveys

- ◆ PUMS
- ◆ 2010 – 2012
- ◆ Occupations merged
  - ◆ 2010-2011
  - ◆ 2012

The screenshot displays the 'American Community Survey' website. The main navigation bar includes 'Main', 'About the Survey', 'Guidance for Data Users', and 'Data & Documents'. A left sidebar lists various data products, with 'Public Use Microdata Sample (PUMS)' highlighted. Under this, 'PUMS Data' is selected, showing a list of available data releases. The main content area is titled 'PUMS Data' and includes links for 'Print', 'Share this page', and 'Connect with us'. It also states 'Supporting documentation for the data below is available' and lists the following data releases available through the American FactFinder website:

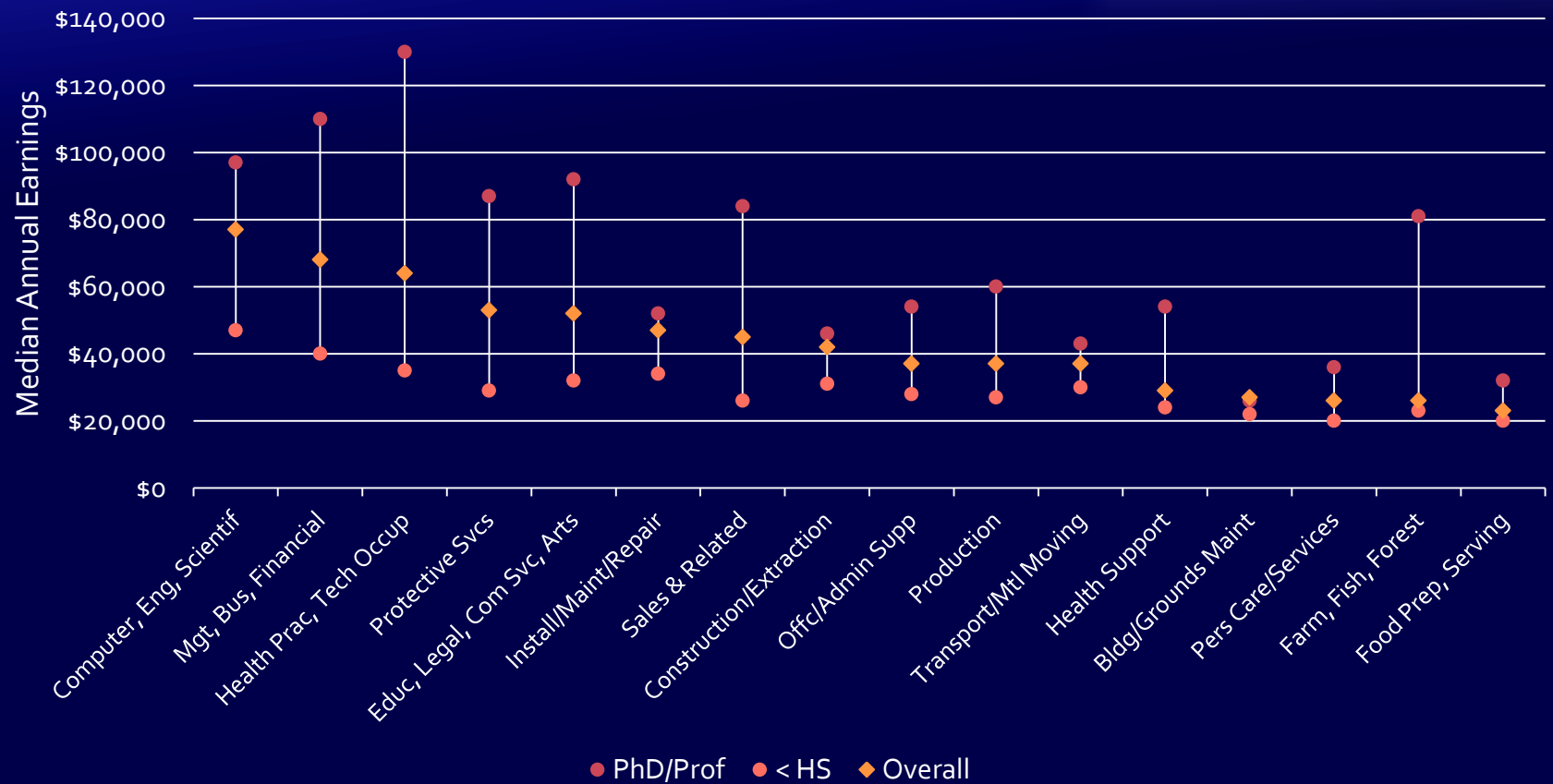
- 2008-2012 ACS 5-year PUMS
- 2010-2012 ACS 3-year PUMS
- 2012 ACS 1-year PUMS
- 2007-2011 ACS 5-year PUMS
- 2009-2011 ACS 3-year PUMS
- 2011 ACS 1-year PUMS
- 2006-2010 ACS 5-year PUMS
- 2008-2010 ACS 3-year PUMS

# Code Listing

## Handout A

10000 Management, Business, Science, and Arts Occupations:				
Internal Code	PUMS Codes	ACS Description	SOC Code	SOC Title
<i>12000 Computer, Engineering, and Science Occupations:</i>				
Architecture and Engineering Occupations:				
12200		Architecture and Engineering Occupations:	17-0000	Architecture and Engineering Occupations
12201	1300	Architects, except naval	17-1010	Architects, Except Naval
			17-1011	Architects, Except Landscape and Naval
			17-1012	Landscape Architects
12202	1310	Surveyors, cartographers, and photogrammetrists	17-1021	Cartographers and Photogrammetrists
			17-1020	Surveyors, Cartographers, and Photogrammetrists
			17-1022	Surveyors
12203	1320	Aerospace engineers	17-2011	Aerospace Engineers
12204	1330, 1340	Biomedical and agricultural engineers	17-2021	Agricultural Engineers
			17-2031	Biomedical Engineers

# Spreading by Education



# Earnings Example

- ◆ Accountants & auditors
  - ◆ Males
  - ◆ Wide range of skills
- ◆ Median \$79,000
- ◆ Mean \$104,314

Education	Median	Mean
GED / HS	\$49,000	\$59,208
Coll. < Bacc.	\$52,000	\$57,012
Bacc. Only	\$78,000	\$77,491
Masters	\$92,000	\$119,373
PhD/Prof.	\$107,000	\$145,961
All	\$79,000	\$104,314

# Prevalence Example

- ◆ Male Accountants again
- ◆ Determine prevalence by education
- ◆ Compare to all FTYR males
- ◆ Ratio identifies “Tendency Ratio”
  - ◆ < 34% Avoided
  - ◆ 34-67% Unlikely
  - ◆ 68%-149% Normal
  - ◆ 150%-199% Likely
  - ◆ 200%+ Highly Likely

Educ.	Account %	Males %	Tendency Ratio
GED / HS	1.6%	26.8%	0.1
< Bacc.	7.5%	29.5%	0.3
Bacc.	62.1%	21.6%	2.9
Masters	24.9%	12.5%	3.2
PhD	3.7%	4.6%	0.8

# Summary by Detail Occupation

## Handout B

Both Genders Management, Business, Science, and Arts Occupations:										
Code	Description	N		All Pers	< HS	GED or HS	Coll, <Bacc	Bacc. Only	Masters	PhD/Prof
Management, Business, Science, and Arts Occupations:		2,155,066	Mn	83,294	51,906	55,795	61,767	83,701	94,074	145,216
			Med	64,000	39,000	45,000	52,000	66,000	75,000	105,000
Computer, Engineering, and Science Occupations:		344,400	Mn	86,062	53,978	63,093	68,864	88,273	100,865	109,213
			Med	77,000	47,000	56,000	64,000	80,000	93,000	97,000
Architecture and Engineering Occupations:		123,882	Mn	87,860	50,594	61,793	68,019	92,658	107,349	121,302
			Med	79,000	44,000	56,000	64,000	84,000	98,000	109,000
12201	Architects, except naval	7,351	Mn	90,067		76,910	79,223	88,093	93,435	103,755
			Med	75,000		60,000	65,000	75,000	77,000	81,000
12202	Surveyors, cartographers, and	1,721	Mn	64,939			56,540	64,761	78,294	

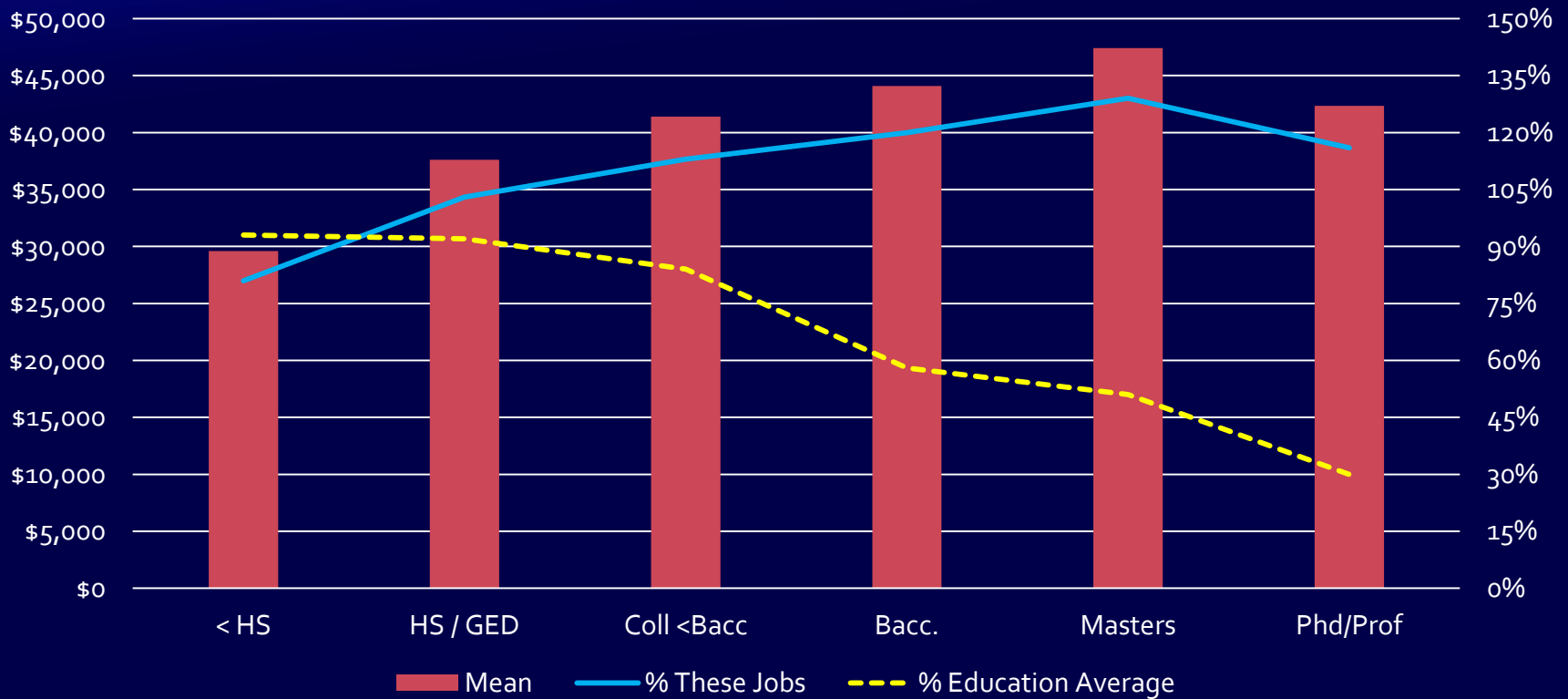
# Observations / Anomalies



- ♦ Low education in unexpected places
  - ♦ Example: Aerospace engineers, page 1
  - ♦ Earnings still spread logically
  - ♦ Physicians / surgeons with low education
    - ♦ Page 9
    - ♦ 132 in 2012 below doctorate
    - ♦ Baccalaureate earnings highest
    - ♦ Mostly US born
- ♦ High education in unexpected places
  - ♦ Example: Construction laborers, page 17
  - ♦ Earnings still increase with education
  - ♦ Signal of human capital

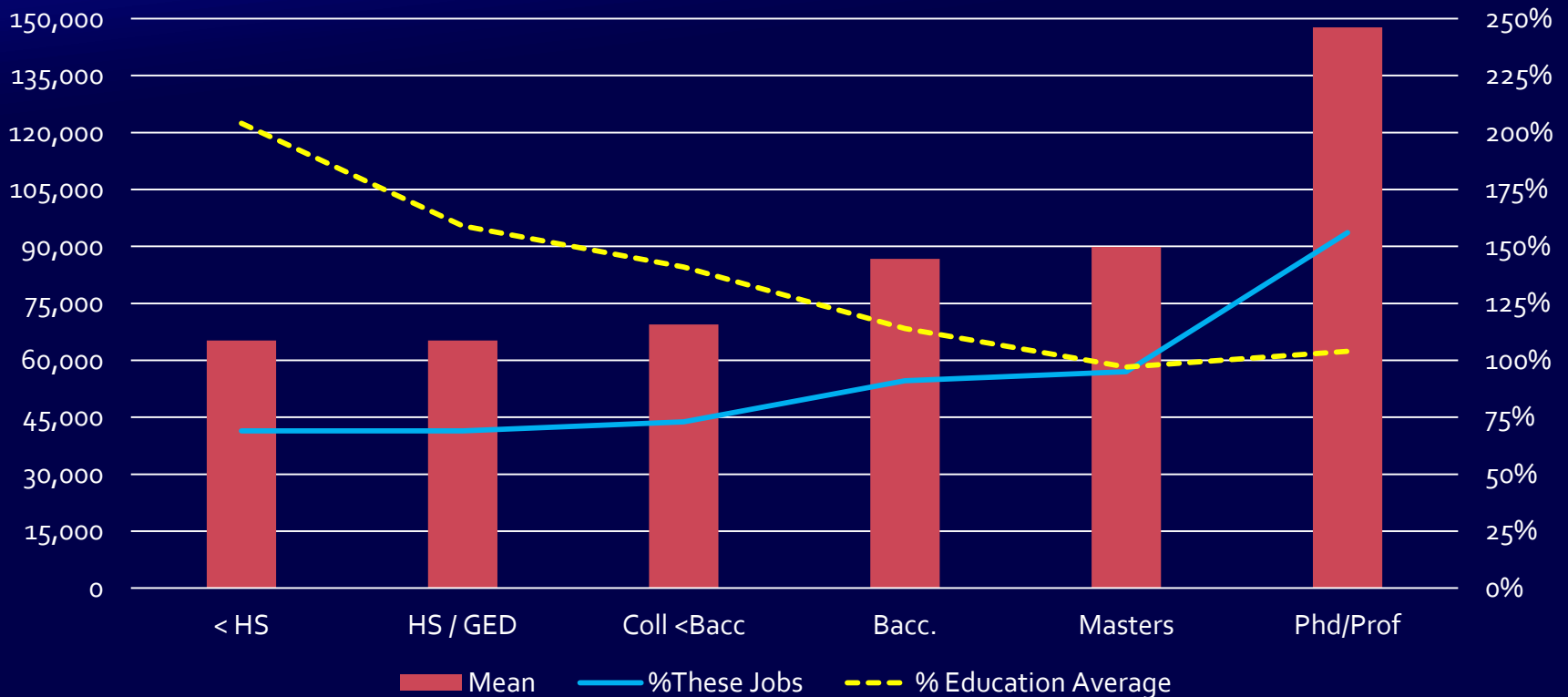
# Low Education Jobs

Full-time, Year-round, Both Genders

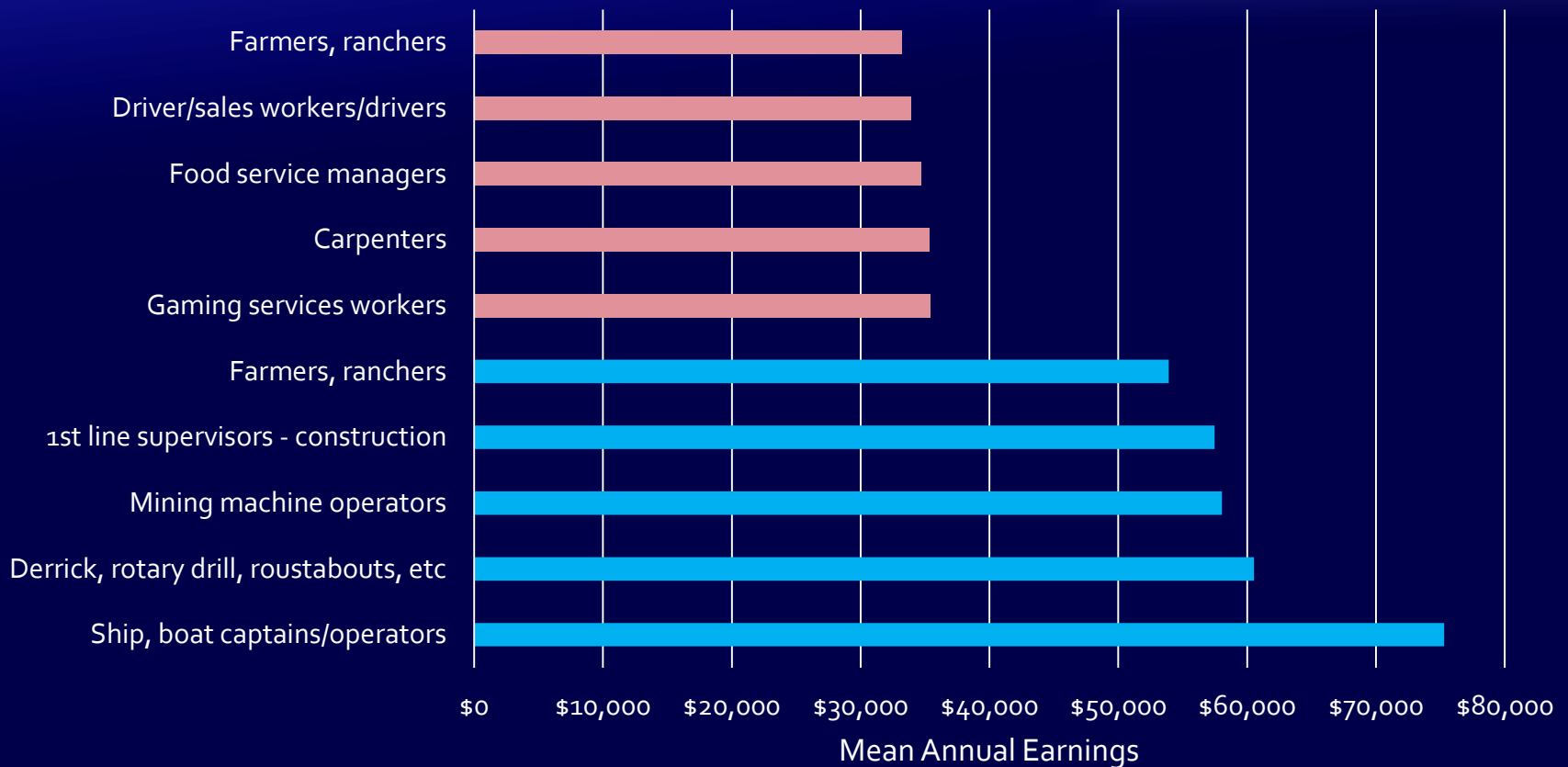


# High Education Jobs

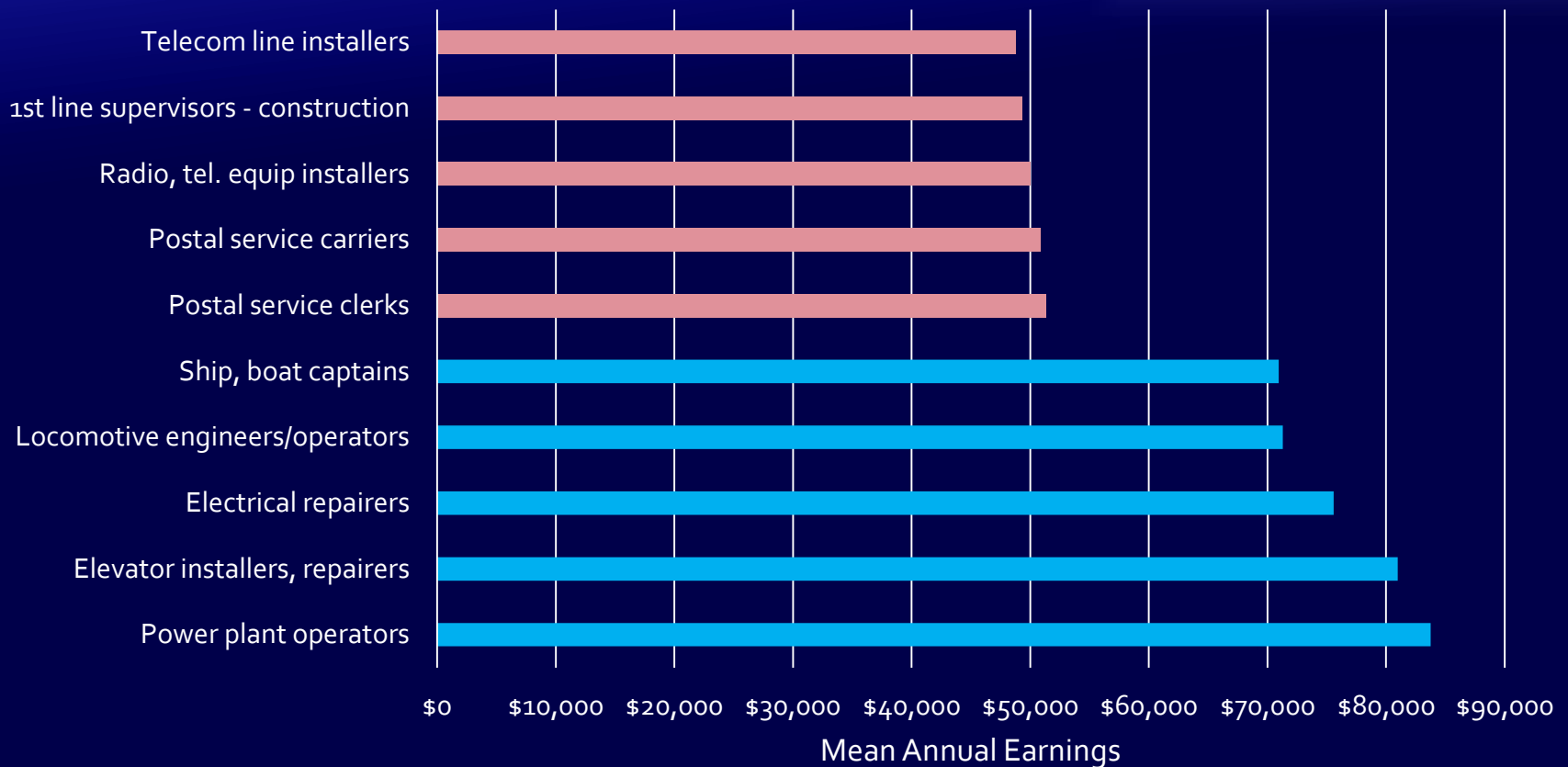
Full-time, Year-round, Both Genders



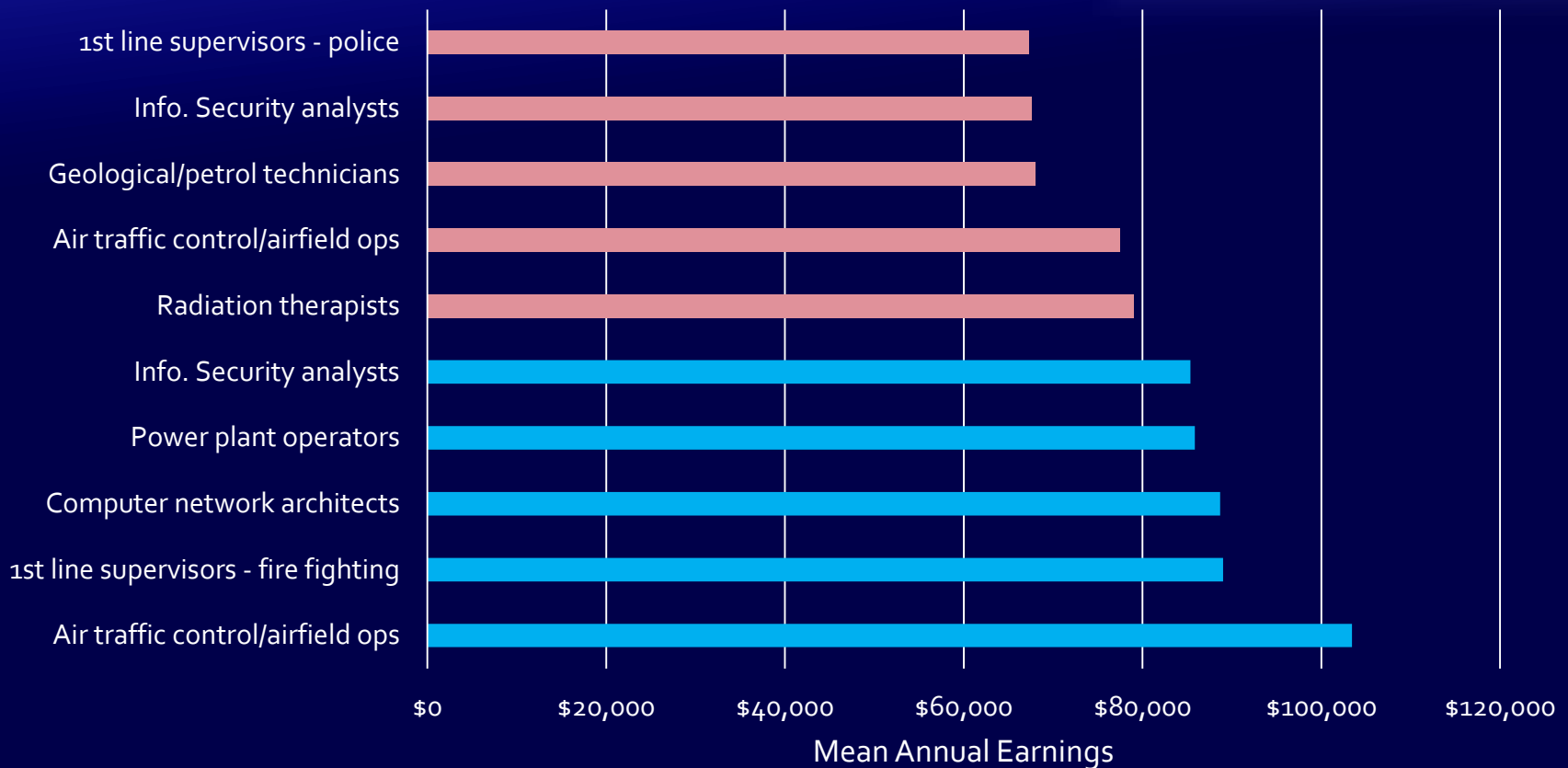
# Top Paying < High School



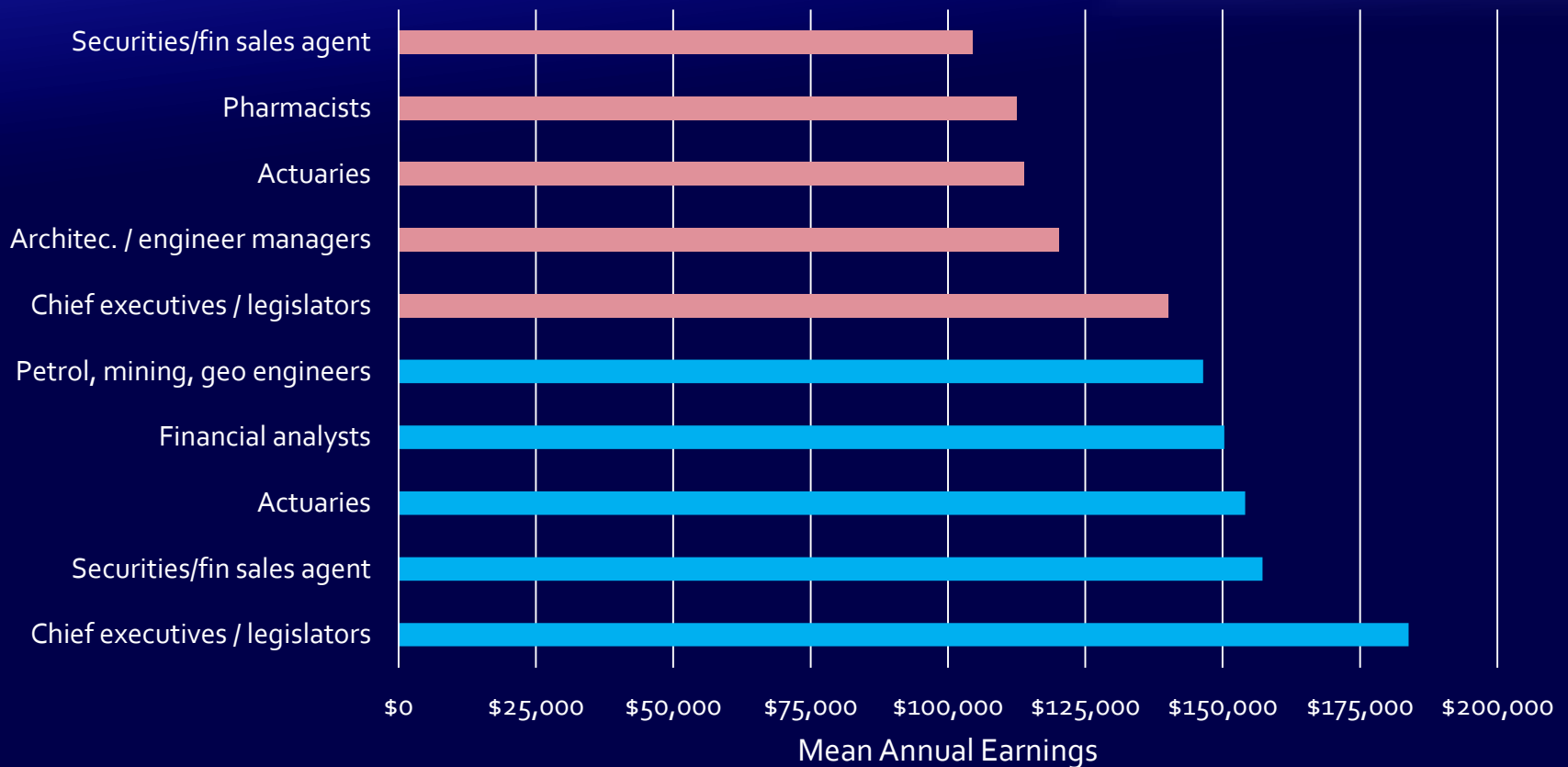
# Top Paying - High School



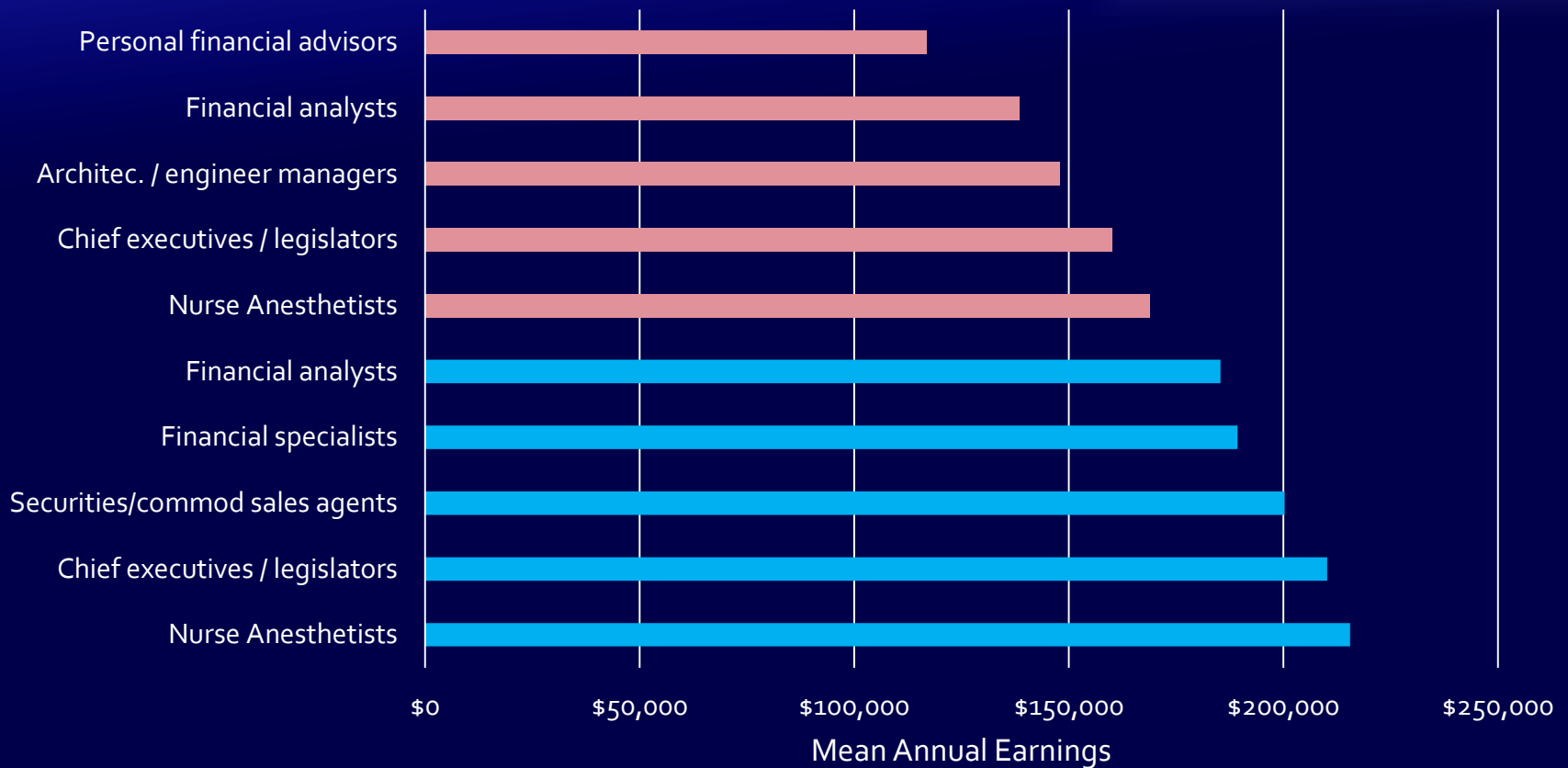
# Top Paying - College < Bacc.



# Top Paying - Baccalaureate



# Top Paying - Masters



# Top Paying - PhD/Prof.



# Detail Occupation Data

Gender	Both Genders	Master Level Management, Business, Science, and Arts Occupations:							
		Summary Level							
Highest Education		N	Wtd N	AvgEarn	Bot 10%	Bot 25%	Median	Top 25%	Top 10%
Master Level 10000 Management, Business, Science, and Arts Occupations:									
Less Than 9th grade		3,826	133,958	51,677	15,000	23,000	38,000	61,000	96,000
Some High School		8,907	320,513	52,002	16,000	26,000	40,000	61,000	94,000
GED or Alt. Credential		10,311	336,893	53,225	20,000	29,000	43,000	64,000	94,000
High School Graduate		83,620	2,839,214	56,100	21,000	31,000	45,000	67,000	96,000
Some College, No Degree		155,732	5,377,121	62,037	24,000	35,000	52,000	75,000	105,000
Associate Degree		106,930	3,537,151	61,356	27,000	39,000	54,000	75,000	98,000
Baccalaureate Degree		384,759	13,201,450	83,701	33,000	46,000	66,000	98,000	139,000
Master's Degree		216,398	7,083,005	94,074	40,000	53,000	75,000	108,000	157,000
Professional Degree		66,039	2,087,517	161,562	48,000	68,000	113,000	210,000	361,000
Doctorate Degree		41,011	1,332,372	119,606	45,000	64,000	96,000	136,000	214,000

# Future Potential



- ◆ Local-based
  - ◆ 5-years
  - ◆ Some limitations
- ◆ Age-earnings?
- ◆ Others?

# Contact Information

- ◆ Dave Gibson
- ◆ Email:  
DaveG@vocecon.com
- ◆ Phone: 312.781.9125

