Harvard Business School | Impact-Weighted Accounts Project

Practitioner Guide to Calculating Employment Impact-Weighted Accounts

August 2022

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Introduction

Firms can measure the impact of their human capital practices by calculating employment impact-weighted accounts. In this guide, we present step-by-step instructions to create monetized impact figures, allowing firms to transparently present the positive and negative value created (or eroded) through the quality of their employment practices. Additional information about impact-weighted accounting is provided in Appendix 1.

Employment impact is calculated across six primary impact dimensions. The starting point is to determine the total wages paid at a firm. From that point, one can then calculate adjustments for the impacts of wage quality, diversity, opportunity, local job creation, health and wellbeing, and career advancement.[1]

As evident in the steps below, values for wage quality, diversity, and opportunity impact will always be either zero or negative. Therefore, they are subtracted. Values for local job creation will always be positive (therefore, added). Health and wellbeing and career advancement can be either positive or negative. This document will describe steps 1 – 5 of the table below, including the necessary data requirements. A forthcoming guide will describe steps 6 and 7. For methodological details and assumptions, refer to Fadhel, Panella, Rouen, and Serafeim (2021) and Freiberg, Panella, Serafeim, and Zochowski (2020)[2,3]

Calculations are based on reasonable assumptions of data availability. If calculations are adjusted due to lack of data, all assumptions should be clearly noted. Some impact dimensions may be tailored based on local context. For example, the calculations in wage equity (a sub-dimension of wage quality), diversity, and opportunity assume the availability of data related to race and ethnicity. If this data is not available or relevant in the regulatory context, the calculations can be adjusted to consider gender only.

Steps to calculate employment impact	
1	Determine total wages paid by firm in the accounting year
2	Subtract wage quality impact
3	Subtract diversity impact
4	Subtract opportunity impact
5	Add local job creation impact
6	Add or subtract health and wellbeing impact
7	Add or subtract career advancement impact

[1] Research papers published by the Impact-Weighted Accounts Initiative use the term "Location" impact rather *local job creation.* The calculation is the same.

[2] Fadhel, Adel and Panella, Katie and Rouen, Ethan and Serafeim, George, Accounting for Employment Impact at Scale (December 1, 2021). Harvard Business School Accounting & Management Unit Working Paper No. 22-018, Available at SSRN: https://ssrn.com/abstract=3925248 or http://dx.doi.org/10.2139/ssrn.3925248

[3] Freiberg, D., Panella, K., Serafeim, G. and Zochowski, R., 2021. Accounting for Organizational Employment Impact. *Harvard Business School Accounting & Management Unit Working Paper*, (21-050).

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1. Determine total wages paid

The beginning of calculating employment impact is a firm's total wages paid in the accounting year. This is simply the sum of all wages paid to all employees

Data Needs: Total wages paid in accounting year disaggregated by firm location

Calculation: Sum of all wages paid in each firm location

2. Wage Quality Adjustment

The first step to analyzing wage quality is to determine whether the paid wages meet the local living wage benchmark to ensure that employees can meet their basic needs based on their earned income. The second step is to adjust for wage levels that are above the local income satiation level to ensure that wages paid are not excessive. The third step is to ensure that wages are equitable within job types and seniority levels such that equal pay is earned for equal work. Each step is outlined below. Not all steps are necessary. The sum of the three categories (A+B+C) is the total *wage quality adjustment.*

A. Living Wage Adjustment[4]

Data Needs:

1. Local annualized living wage benchmark (example: $35,000). See Appendix 2 for detailed criteria of an acceptable living wage benchmark.
2. Annual wages earned for each employee in each location (example: $25,000).

Calculation:

1. Categorize each worker into one of the following living wage categories based on how the annual actual wage paid compares to the local living wage: Above living wage, 90% to 99% of a living wage, 75% to 89% of a living wage, 50% to 74% of a living wage, below 50% of a living wage:

$$\left(\frac{Actual\ Wage}{Living\ Wage}\right) \times 100\% = Living\ Wage\ Category$$

Example 1: A worker earning $25,000 per year in an area where the living wage is $35,000 per year.

- The actual wage ($25,000) is 71% of the local living wage ($35,000), so the worker is placed in the 50% to 75% of a living wage category.

$$\left(\frac{\$25{,}000}{\$35{,}000}\right) \times 100\% = 71\%$$

Example 2: A worker earning $40,000 per year in an area where the living wage is $45,000 per year.

- The actual wage ($40,000) is 89% of the local living wage ($45,000), so the worker is placed in the 75% to 89% of a living wage category.

$$\left(\frac{\$40{,}000}{\$45{,}000}\right) \times 100\% = 89\%$$

2. Calculate the living wage adjustment for each living wage category in step 1 using the following formula:

$$Number\ of\ workers\ in\ the\ living\ wage\ category \times (1 - living\ wage\ rate) \times living\ wage\ in\ that\ location$$

Living wage category	Living wage rate
Above a living wage	100%
90-99% of a living wage	95%
75-89% of a living wage	82.5%
50-74% of a living wage	62.5%
Below 50% of a living wage	0%

[4] The methodology for the living wage adjustment is based on recommendations from the Accounting for Living Wage Initiative at the Capitals Coalition and may evolve. Additional disclosures may be recommended by the Initiative.

Note: The living wage rate is the midpoint of the amount the workers in each living wage category earn below a living wage. For example, 95% is the midpoint between 90-99%.

Example 1: A worker earning $25,000 per year in an area where the living wage is $35,000 per year. The worker was categorized in the 50-74% living wage category in Step 1.

- The total living wage adjustment is $13,125.

$$Living\ wage\ adjustment\ =\ 1\ worker\ \times\ (1-62.5\%)\ \times\ \$35{,}000\ =\ \$13{,}125$$

Example 2: A worker earning $40,000 per year in an area where the living wage is $45,000 per year. This worker was categorized in the 75-89% living wage category in Step 1.

- The total living wage adjustment is $7,875.

$$Living\ wage\ adjustment\ =\ 1\ worker\ \times\ (1-82.5\%)\ \times\ \$45{,}000\ =\ \$7{,}875$$

3. Sum the living wage adjustments and multiply by -1.

$$\sum_{i=Living\ wage\ category} Living\ wage\ adjustment_i \times (-1)$$

Example: Sum the living wage adjustments of the two worker examples above.

- The total living wage adjustment is $21,000. This is the sum of the individual living wage adjustments for each living wage category identified in steps 1 and 2.

$$Total\ living\ wage\ adjustment\ =\ (\$13{,}125\ +\ \$7{,}875)\ \times\ -1\ =\ -\$21{,}000$$

B. Income Satiation Adjustment[5]

Data Needs:

1. Local life evaluation income satiation point (see example below)
2. Annual actual wages earned for each employee at each location (see two examples below)

Calculation:

1. Determine the local life evaluation income satiation level (local LE). The local LE is determined based on geography, however available estimates are often calculated at the regional level (for regional life evaluation income satiation levels, refer to Jebb et al, 2018). If this benchmark data is unavailable, the local LE figure can be calculated by multiplying the regional LE by the ratio of local living wage and regional average living wage.

$$lw\_ratio = local\ lw / regional\ lw$$
$$local\ LE\ =\ lw\_ratio\ \times regional\ LE$$

Example: Company operates in an area with regional $LE = \$105{,}000$*, local living wage* $= \$31{,}200$*, regional living wage* $= \$34{,}403$

$$lw\_ratio = local\ lw / \text{regional}\ lw\ = \$31{,}200\ /\ \$34{,}403 = 0.91$$
$$local\ LE = lw_{ratio} \times regional\ LE = 0.91 \times \$105{,}000 = \$95{,}550$$

2. Determine the LE adjustment for each employee:

Example 1: A worker earning $40,000 per year in an area with local LE of $\$95{,}550$.

- If the annual actual wage paid is less than the local life evaluation income satiation point (local LE) no adjustment is needed.

$$\$40{,}000 < \$95{,}550$$
$$Income\ satiation\ adjustment\ =\ \$0$$

Example 2: A worker earning $200,000 per year in an area with local LE of $95,550.

- If annual actual wage paid is higher than the local life evaluation income satiation point:

$$\$200{,}000\ > \$95{,}550$$

- Determine the income satiation adjustment by referencing the workbook "IWA_Income Satiation Adjustment Formula", worksheet "Function", column B. The workbook will calculate the adjustments based on the user's data. See example in cell D127 to match to the numbers in the example below. **Appendix 3** provides the

[5] For an Excel workbook with the calculation for income satiation adjustment, contact ImpactWeightedAccounts@hbs.edu or visit the IWA website at www.hbs.edu/impact-weighted-accounts to access the "IWA Income Satiation Adjustment Formula" workbook.

detailed methodology for the income satiation adjustment which is based on a declining marginal utility rate of 1.26.

$$LE\ Adjusted\ Salary - Actual\ annual\ wage\ paid = Income\ satiation\ adjustment$$
$$\$158{,}995 - 200{,}000 = -\$41{,}005$$
$$Income\ satiation\ adjustment = -\$41{,}005$$

3. Sum all income satiation adjustments for all employees in the firm.

C. Wage Equity Adjustment

Data Needs:

1. Annual wages earned for each employee, with location, job title, gender and race/ethnicity specified (see examples below)

Calculation:

1. Group employees by each job title and location. For example, all Technicians (job title) in Boston, MA (location) should be in one list.

2. Determine the average wage of each demographic group for each title and location category. For example, all Male (gender) employees in the list of Technicians (job title) in Boston MA (location).

   Average Wage of White Male Technician in Boston, MA $= \$100{,}000$
   Average Wage of Black Female Technician in Boston, MA $= \$90{,}000$
   (Repeat for all groups)

3. Determine the demographic group in the list with the highest average wage. In the example above, this is White Male employees.

4. Determine the wage difference between the highest paid demographic group and other groups.

   Average Wage of Male Technician in Boston, MA $= \$100{,}000$
   Average Wage of Black Female Technician in Boston, MA $= \$90{,}000$
   Equity adjustment per Black Female employee $= \$90{,}000 - \$100{,}000 = -\$10{,}000$

5. Identify the number of employees in the given demographic group who are earning less than the average wage of the highest paid demographic group.

   Example: 10 Black Female Technicians in Boston, MA

6. Multiply the equity adjustment per employee by the number of employees in the demographic group affected.

$$10 \times (-\$10{,}000) = -\$100{,}000$$

7. Repeat Steps 4 – 6 for each demographic group (e.g. White Female, Male Asian). Sum all values to produce the total wage equity adjustment for the employee job title and location category (e.g. Technicians in Boston, MA).
8. Repeat Steps 1 – 7 for all other job title and location categories (e.g. Sales Associates in Austin, TX).
9. Sum all values to produce the total wage equity adjustment.

3. Diversity Adjustment

This calculation determines the negative cost to the local labor community based on whether the organization's workforce is representative of the demographics of the local population. The value may be zero or negative for this adjustment.

Data Needs:

1. Population demographics for each company location (Example: 10% Asian Female, 10% Black Female, etc.)
2. Workforce demographics for each company location
3. Annual wages earned at firm for each location (example: $\$40{,}000$)

Calculation:

1. Determine the difference (representation gap) between the local population and firm workforce.

$$firm\ workforce\ (\%) - local\ population\ (\%) = Representation\ Gap\ (\%)$$

Local Population $= 10\%$ *Asian Female*
Firm workforce $= 5\%$ *Asian Female*
Representation Gap for Asian Females= $5\% - 10\% = -5\%$

2. Determine the workforce gap.

$$Representation\ Gap\ (\%) \times Number\ of\ Employees\ at\ the\ firm = Workforce\ Gap$$

Representation Gap for Asian Females $= -5\%$
Number of Employees $= 100$
Workforce Gap for Asian Females $= -5\% \times 100 = -5$

3. Determine the diversity debit.

$$Workforce\ Gap \times Average\ annual\ salary = Diversity\ debit$$

Workforce Gap for Asian Females $= -5$
Average annual salary $= \$50{,}000$
Diversity debit $= -5 \times \$50{,}000 = -\$250{,}000$

4. Repeat Steps 1 – 3 for each demographic group.
5. Repeat Steps 1 – 4 for each location.
6. Sum all values to determine the total diversity adjustment.

4. Opportunity Adjustment

This calculation determines the negative cost to the workforce based on whether the organization's Job categories and seniority levels are representative of the firm's demographics.[6] The total Opportunity Adjustment is A + B (see following calculations). The value may be zero or negative for this adjustment.

[6] The International Standard Classification of Occupations is a helpful guide for determining Job categories.

A. Opportunity across Job categories

Data Needs:

1. Total workforce demographics at each company location
2. Job category demographics at each company location
3. Annual wages earned for each employee, with location, Job category, and gender and race/ethnicity specified in accordance with local regulatory guidelines

Calculation:

1. Determine the average annual wages paid in each Job category (Total unadjusted annual wages paid in Job category1 / Total employees in Job category1). Rank the Job categories from highest to lowest salary and determine the median category. Establish a "high salary group" and "low salary group" group (employees in Job categories earning above the median rank are in the "high salary group" and those earning below are in the "low salary group").

2. Determine the expected number of employees of a demographic group (e.g. Black Female) in the "high salary group".

$$firm\ workforce\ demographics \times the\ total\ number\ of\ employees\ in\ the\ "high\ salary\ group" = expected\ number\ of\ employees\ of\ a\ demographic\ group$$

Firm workforce $= 15\%$ *Black Female*
High salary group $= 100$ *total employees*
Expected Black Females in "high salary group" $= 15\% \times 100 = 15$

3. Determine the Opportunity Gap in the "high salary group".

$$Actual\ representation - Expected\ representation = Opportunity\ Gap\ in\ the\ "high\ salary\ group"$$

Expected representation of Black Females in "high salary group" $= 15$
Actual representation of Black Females in "high salary group" $= 10$
Opportunity Gap for Black Females in "high salary group" $= 10 - 15 = -5$[7]

4. Determine the *Opportunity penalty and the Opportunity Adjustment.*

$$Average\ "high\ salary\ group"\ salary - Average\ "low\ salary\ group"\ salary = Opportunity\ Penalty$$

$$\text{Opportunity Gap in the "high salary group"} \times Opportunity\ Penalty = Opportunity\ adjustment$$

Average "high salary group" salary $= \$100{,}000$
Average "low salary group" salary $= \$60{,}000$
Opportunity Penalty $= \$100{,}000 - \$60{,}000 = \$40{,}000$
Opportunity Adjustment for Black Females $= -5 \times \$40{,}000 = -\$200{,}000$

[7] In the case that the Opportunity Gap is positive, replace with 0. There is no credit applied for over-representation of a demographic group.

5. Repeat Steps 2 – 4 for each demographic group.
6. Repeat Steps 1 – 5 for each Job category.
7. Repeat Steps 1 – 6 for each company location.
8. Sum all values to determine the total opportunity across Job categories adjustment.

B. Opportunity across seniorities

Data Needs:

1. Total workforce demographics at each company location
2. Seniority demographics at each company location*
3. Annual wages earned for each employee, with location, seniority level, and gender and race/ethnicity specified

Calculation:

1. Determine the average salary in each seniority level (e.g. 1-4) for each Job category (e.g. "Sales")

2. Determine the expected number of employees of a demographic group (e.g. Asian Male) in each seniority and Job category.

$$firm\ workforce\ demographics \times the\ total\ number\ of\ employees\ in\ the\ seniority\ level\ and\ Job\ category = expected\ number\ of\ employees\ of\ a\ demographic\ group\ in\ a\ seniority\ level$$

Firm workforce $= 15\%$ *Asian Male*
Total employees in Seniority Level 4 and Job category "Sales" $= 100$ *total employees*
Expected Asian Males in Seniority Level 4 and Job category "Sales" $= 15\% \times 100 = 15$

3. Determine the Opportunity Gap for the demographic group in the Seniority Level and Job category.

$$Actual\ representation - Expected\ representation = Opportunity\ Gap$$

Actual representation of Asian Males in Seniority Level 4 and Job category "Sales" $= 10$
Expected representation of Asian Males in Seniority Level 4 and Job category "Sales $= 15$
Opportunity Gap for Asian Males in Seniority Level 4 and Job category "Sales"
$= 10 - 15 = -5$[8]

4. Determine the *Opportunity penalty and the Opportunity Adjustment.*

$$Average\ salary\ in\ seniority\ level\ (n) - Average\ salary\ in\ seniority\ level\ (n-1) = Opportunity\ Penalty$$

$$Opportunity\ Gap \times Opportunity\ Penalty = Opportunity\ adjustment$$

Average Seniority Level 4 and Job category "Sales" salary $= \$150{,}000$
Average Seniority Level 3 and Job category "Sales" salary $= \$100{,}000$
Opportunity Penalty $= \$150{,}000 - \$100{,}000 = \$50{,}000$
Opportunity Adjustment for Asian Males in Seniority Level 4 and Job category Sales
$= -5 \times \$50{,}000 = -\$250{,}000$

5. Repeat Steps 2 – 4 for each demographic group at a specific seniority level and Job category.

[8] In the case that the Opportunity Gap is positive, replace with 0. There is no credit applied for over-representation of a demographic group.

6. Repeat Steps 2 – 5 for each Seniority level at a specific Job category *except for entry-level employees.*[9]
7. Repeat Steps 2 – 6 for each Job category.
8. Repeat Steps 1 – 7 for each company location.
9. Sum all values to determine the total Opportunity across seniorities adjustment.

[9] The wage penalty is calculated as difference between average salary at seniority n and seniority n+1, excluding seniority level 1.

5. Job Creation Adjustment

This calculation determines the positive impact on the local labor community based on job creation.

Data Needs:

1. Local employment and unemployment data
2. Maximum public social safety net (e.g. annual unemployment insurance)
3. Total workforce at each company location
4. Average salary at each company location

Calculation:

1. Determine the number of employees (total workforce) at each company location.

2. Determine the total number of employed and unemployed people at each company location.

3. Determine the incremental wages received due to firm employment at each company location.

$$Average\ salary\ in\ Location\ 1 - Maximum\ annual\ social\ safety\ net\ through\ Unemployment\ Insurance = Incremental\ wages\ received\ due\ to\ firm\ employment$$

Average salary in Location 1 $= \$75{,}000$
Maximum annual social safety net through Unemployment Insurance $= \$25{,}000 *$
Incremental wages received due to firm employment$= \$75{,}000 - \$25{,}000 = \$50{,}000$

4. Determine the hypothesized unemployment rate without job creation from the firm.

$$(Total\ unemployed\ persons + Total\ employees\ at\ firm\ location)\ /\ (Total\ employed\ persons + Total\ unemployed\ persons) = hypothesized\ local\ unemployment\ rate\ without\ firm\ job\ creation$$

Total employed persons $= 100{,}000$
Total unemployed persons $= 5{,}000$
Total employees at firm location $= 1{,}000$
Hypothesized local unemployment rate without firm job creation
$= (5{,}000 + 1{,}000) / (100{,}000 + 5{,}000) = 6\%$

5. Determine the monetized job creation impact by multiplying the hypothesized unemployment rate without firm employment by the incremental wages received due to firm employment by the total employees at the firm.

$$Incremental\ wages\ received\ due\ to\ firm\ employment \times Hypothesized\ local\ unemployment\ rate\ without\ firm\ job\ creation \times Total\ employees\ at\ firm\ location = Job\ creation\ impact$$

Incremental wages received due to firm employment $= \$50{,}000$
Hypothesized local unemployment rate without firm job creation $= 6\%$
Total employees at firm location $= 1{,}000$
Job creation impact $= \$50{,}000 \times 6\% \times 1{,}000 = \$3m$

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6. Repeat Steps 1 – 5 for each location.
7. Sum all values to determine the total job creation adjustment.

Total Employment Impact

This guide illustrates how to calculate your organization's total employment impact based on the following steps:

Steps to calculate employment impact	
1	Determine total wages paid by firm in the accounting year
2	Subtract *wage quality* impact
3	Subtract *diversity* impact
4	Subtract *opportunity* impact
5	Add *local job creation* impact

The question is, now what? Now that you have calculated employment impact at your organization, what can you do with this number? As a start, the Impact-Weighted Accounts Initiative recommends calculating your average *employment impact intensity.*

$$\textbf{\textit{Total Employment Impact / Total Employees = Employment Impact Intensity}}$$

This figure can be described as "impact per employee." It can be compared to other firms in your industry or geography to better understand your employment impact performance. Monetized employment impact should also be analyzed by each impact area (e.g. *diversity, opportunity)* to determine areas for improvement. For a dataset of employment impact data for over 2500 firms, please see www.hbs.edu/impact-weighted-accounts and search under the "Data" tab.

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Appendix 1: About Impact-Weighted Accounting

Background

The Impact-Weighted Accounts project (IWA) is a joint initiative between the Global Steering Group of Impact Investment and the Impact Management Project incubated at Harvard Business School. The mission of the Impact-Weighted Accounts Project is to drive the creation of financial accounts that reflect a company's financial, social, and environmental performance.

The **four key messages of IWA** are:

- Impact can be measured and compared
- Impact measurement in monetary terms reflected in financial statements (impact-weighted accounts) is a necessary condition for the creation of impact economies that optimize risk, return and impact.
- Creating impact-weighted accounts is cost-effective, scalable, and actionable.
- Analyzing impact-weighted accounts provides new important insights for business leaders and policymakers.

IWA is committed to methodology and research transparency. All the Impact-Weighted Accounts research materials are posted on the Impact-Weighted Accounts Website. The site contains search and sort functionality to enable fast navigation.

Get In Touch

If you are experimenting with impact-weighted accounting, we would love to hear from you! More information about IWA can be found at www.hbs.edu/impact-weighted-accounts, or by reaching out to ImpactWeightedAccounts@hbs.edu.

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Appendix 2: Living Wage

A quality living wage benchmark should meet the following criteria:[10]

a. It should be based on data collected in the living wage location.
b. It should account for urban and rural differences.
c. It should measure the cost of living for a typical family.
d. It should include costs related to good nutrition, decent housing, clothing, footwear, education, healthcare, household goods, transportation, etc.
e. It should account for deductions from gross income, including taxes and union fees.
f. It should be at least partially based on consultations with workers.
g. It should have no inherent conflicts of interest.
h. It should have a clear and consistent methodology.
i. It should be updated annually to account for inflation.

The following living wage methodologies are recognized by civil society organizations as meeting the above criteria. It should be noted that this list is not exhaustive.

- Wage Indicator's Typical Family Methodology
- Fair Wage Network's Typical Family Methodology
- Full Anker methodology
- Anker Reference Value Methodology

IWA uses the MIT Living Wage Calculator to determine living wage benchmarks due to its comprehensive coverage of the United States.

[10] This benchmark and guidance is sourced from the Capitals Coalition Accounting for Living Wage Initiative: https://capitalscoalition.org/project/accounting-for-a-living-wage/

Appendix 3: Marginal Impact of Income

Drawing on research that suggests the marginal utility of income decreases as income increases (Layard et al., 2008; Jebb et al., 2018; Diener et al., 1993) and previous efforts to create a marginal utility function for income (Vionnet and Haut, 2018), we design a function to convert raw salaries into impact values at a marginally decreasing rate. The function is underpinned by two key principles: first, the functional form of the marginal rate, which should show accelerating reduction of the marginal utility of an additional dollar of wages for higher level of wages and, second, identification of an inflection point at which a raw wage should begin to reflect decreasing marginal returns. While we strive to design a functional form and identify an inflection point based on a broadly applicable methodology that is aligned with research on the marginal utility of income, more research is needed to empirically test the nature of the income-impact relationship. Such research could guide applications of the measurement of wage quality.

Functional Form[11]

We design a function such that the marginal rate takes a negative exponential functional form. Therefore, the curve that describes the adjusted salaries is a natural logarithm. Exhibit A1 provides a visual representation of each function. The inclusion of the marginal impact of income function to our framework provides a method for distinguishing between a firm that pays 10 employees each $10,000,000 in salaries and a firm that pays 1,000 employees each $100,000 in salaries (both pay $100,000,000 in total salaries). The use of a negative exponential function to describe the marginal rate allows for a conservative approach to adjusting salaries above, but close to, the designated inflection point (discussed below). We use an elasticity measure of 1.26 to calculate the marginal utility of income, based on Layard et al.'s analysis of six surveys across multiple geographies, in which no systematic differences were found based on sex, age, education, or marital status (Layard et al, 2008). Exhibit A1, Marginal Rate, begins at $120,000 and shows the marginal rate declines to .4 when the raw salary reaches $250,000. This translates into a salary of $250,000 being adjusted down by approximately $50,000, as shown in Table 23. Continuing the declining marginal utility function, a raw salary of $1,000,000 is reduced to a positive impact of $315,127 at a marginal rate of .07.

Inflection Point

Jebb et al. (2018) identify the income satiation level for life evaluation as $105,000 on average for North America. We use this value as the inflection point at which the marginal impact of incomes begins decreasing. However, just as the living wage varies across geographies, this average level of income satiation likely varies across geographies. According to the MIT living wage calculator, the average living wage in the US for a family of four (two children, two working adults) is $34,403. We calculate the average living wage for Intel employees to be $39,880, approximately 16% above the national average. To incorporate a contextual measure of location into the inflection point, we increase the average income satiation by 16%, moving from $105,000 to approximately $121,714. Based on the regional income satiation values in the Jebb et al analysis, as well as the availability of living wage estimates in

[11] The authors recognize Ben Lawton, of KKS Advisors, for his significant contribution designing and testing the functional form of the marginal utility of income methodology.

other geographies, we can replicate this location-based adjustment in future analyses. Table 1 describes the marginal rate and approximate adjusted salary for intervals of $10,000.

Exhibit A1: Marginal Rate and Raw and Utility-Adjusted Salaries

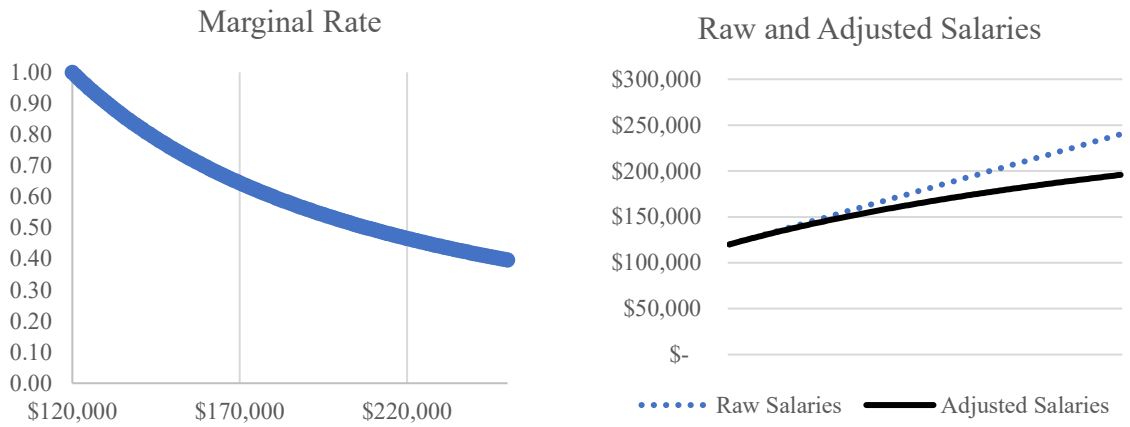

Table 1: Utility-Adjusted Salaries

Raw Salary	Marginal Rate	Adjusted Salary
$100,000	1	$100,000
$110,000	1	$110,000
$120,000	1	$120,000
$130,000	0.904	$129,506
$140,000	0.823	$138,132
$150,000	0.755	$146,015
$160,000	0.696	$153,262
$170,000	0.645	$159,960
$180,000	0.600	$166,179
$190,000	0.560	$171,977
$200,000	0.525	$177,403
$210,000	0.494	$182,497
$220,000	0.466	$187,294
$230,000	0.441	$191,825
$240,000	0.418	$196,113
$250,000	0.397	$200,182