

Methodology for the multidimensional characterization of the Quality of Employment in Ecuador

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CONTENTS

1. Introduction
2. Objectives
3. Theoretical framework
4. Discussion and Results
5. Conclusions



1. Introduction

Quality of Employment

What is it ?

How to quantify it ?

How to measure it ?

In Ecuador:

Who really have a good or poor
quality of employment?



1. Introduction

1.0 Quality of Employment- Perspectives



State

- Human and labor rights
- Economic growth
- Poverty

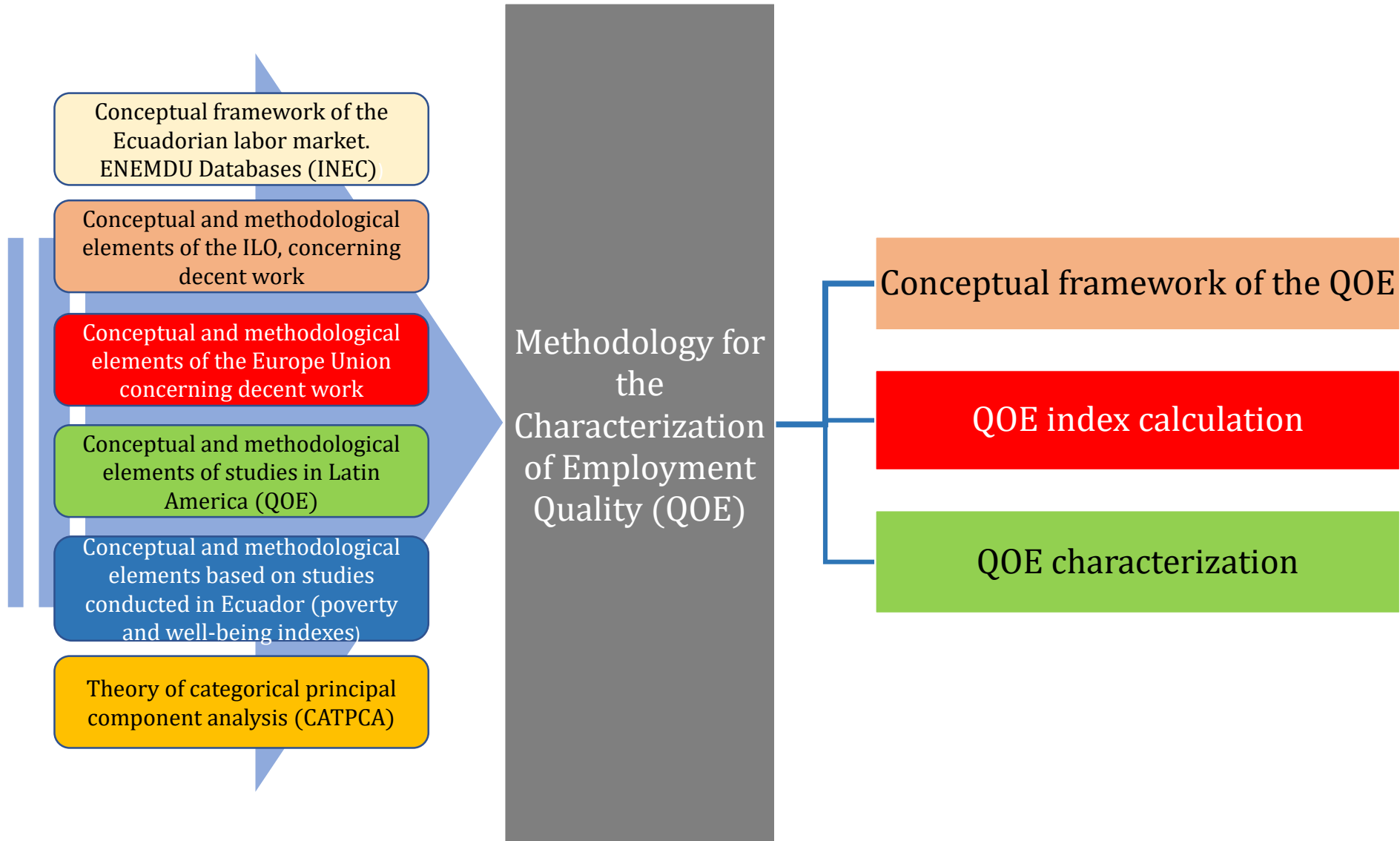
Company

- Have productive and versatile workers

Workers

- Stability
- Social benefits
- Economic satisfaction
- Personal satisfaction

1. Introduction – Problem statement



1. Introduction

1.1 Ecuadorian labor market

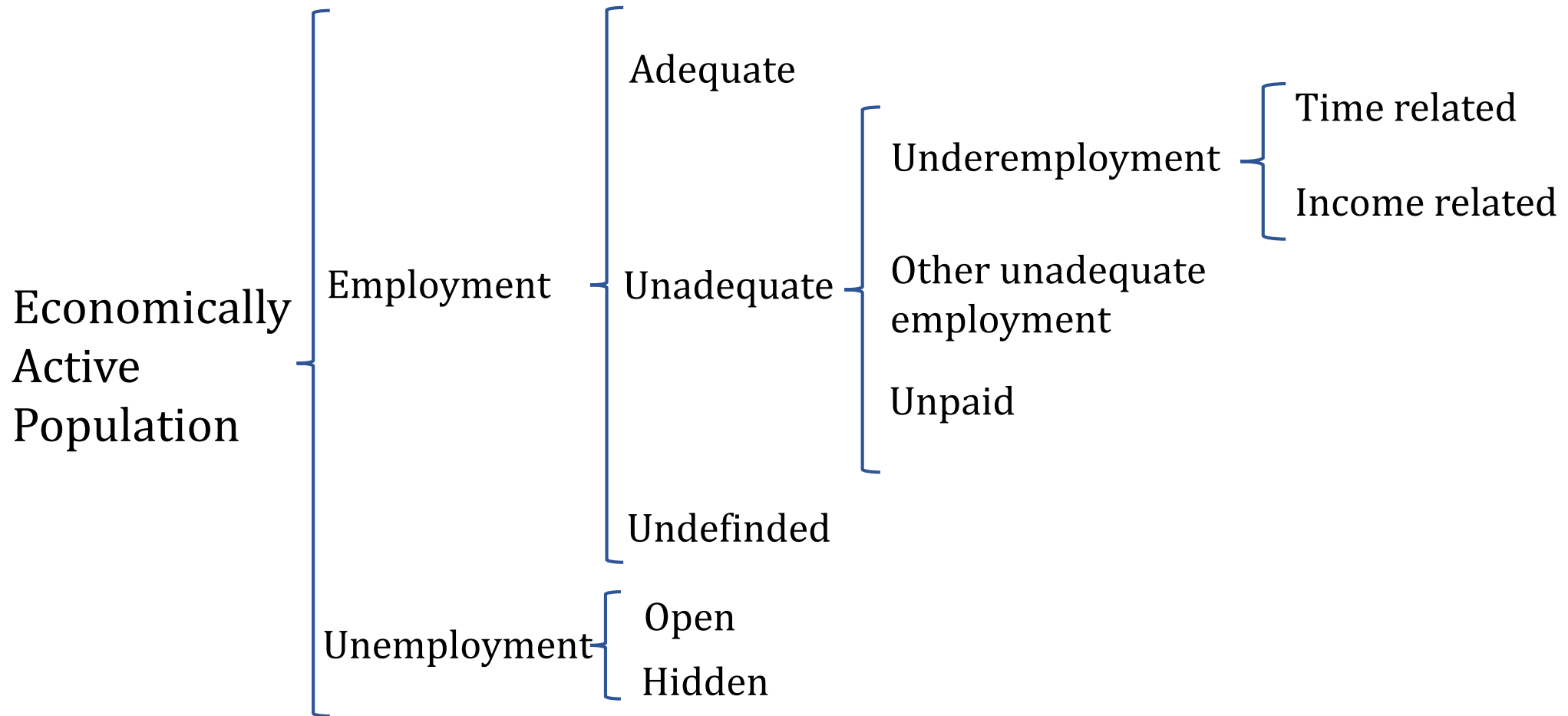


Fig 1.2 – EAP Clasification
(INEC, 2014)

1. Introduction

1.1 Ecuadorian Labor Market

Table 1.1.1

History of Employment and Unemployment survey (ENEMDU)

Año	Area	Self – represented Cities	Periodicity	Inference level
1987	Urban	Quito, Guayaquil, Cuenca	Annual	Self-represented cities
1988	Urban	Quito, Guayaquil, Cuenca, Machala	Annual	Self-represented cities
1989	Urban	Quito, Guayaquil, Cuenca, Machala	Annual	Self-represented cities
1990	Urban, Rural	Quito, Guayaquil, Cuenca, Machala	Annual	National & Self-represented cities
1991 to 2002	Urban	Quito, Guayaquil, Cuenca, Machala	Annual	National & Self-represented cities
2003	Urban & rural	Quito, Guayaquil, Cuenca, Machala	Biannual	National & Self-represented cities
2004 to 2006	Urban & rural	Quito, Guayaquil, Cuenca, Machala	Quarterly	National & Self-represented cities
2007 to 2016	Urban & rural	Quito, Guayaquil, Cuenca, Machala, Ambato	Quarterly	National & Self-represented cities

Source: Instituto Nacional de Estadística y Censos (INEC)

1. Introduction

1.1 Ecuadorian Labor Market

Table 1.1.2

Main variables investigated by ENEMDU survey

No	Variable	Population	No	Variable	Population
1	Area	Total Population	16	Inactivity condition	Inactive population 5+
2	Natural region	Total Population	17	Occupational position	Occupied population 5+
3	Province	Total Population	18	Type of contract	Occupied population 5+
4	Main cities	Total Population	19	Workplace	Occupied population 5+
5	Gender	Total Population	20	Number of workers	Occupied population 5+
6	Age	Total Population	21	Existence of accounting records	Occupied population 5+
7	Family relationship	Total Population	22	Unit register of taxpayers (RUC)	Occupied population 5+
8	Social Security	Total Population	23	Number of jobs	Occupied population 5+
9	Civil Status	12+ population	24	Working hours in reference week	Occupied population 5+
10	Level of instruction	5+ population	25	Job satisfaction	Occupied population 5+
11	Ethnicity	5+ population	26	Work income	Occupied population 5+
12	Worked last week (reference week)	5+ population	27	Economic sector	Occupied population 5+
13	Job search management	Unemployment 5+	28	Occupational group	Occupied population 5+
14	Reason for no job search	No job 5+	29	Activity branch	Occupied population 5+
15	Job availability	Inactive population 5+	30	Activity condition	Total population

Source: Instituto Nacional de Estadística y Censos (INEC)

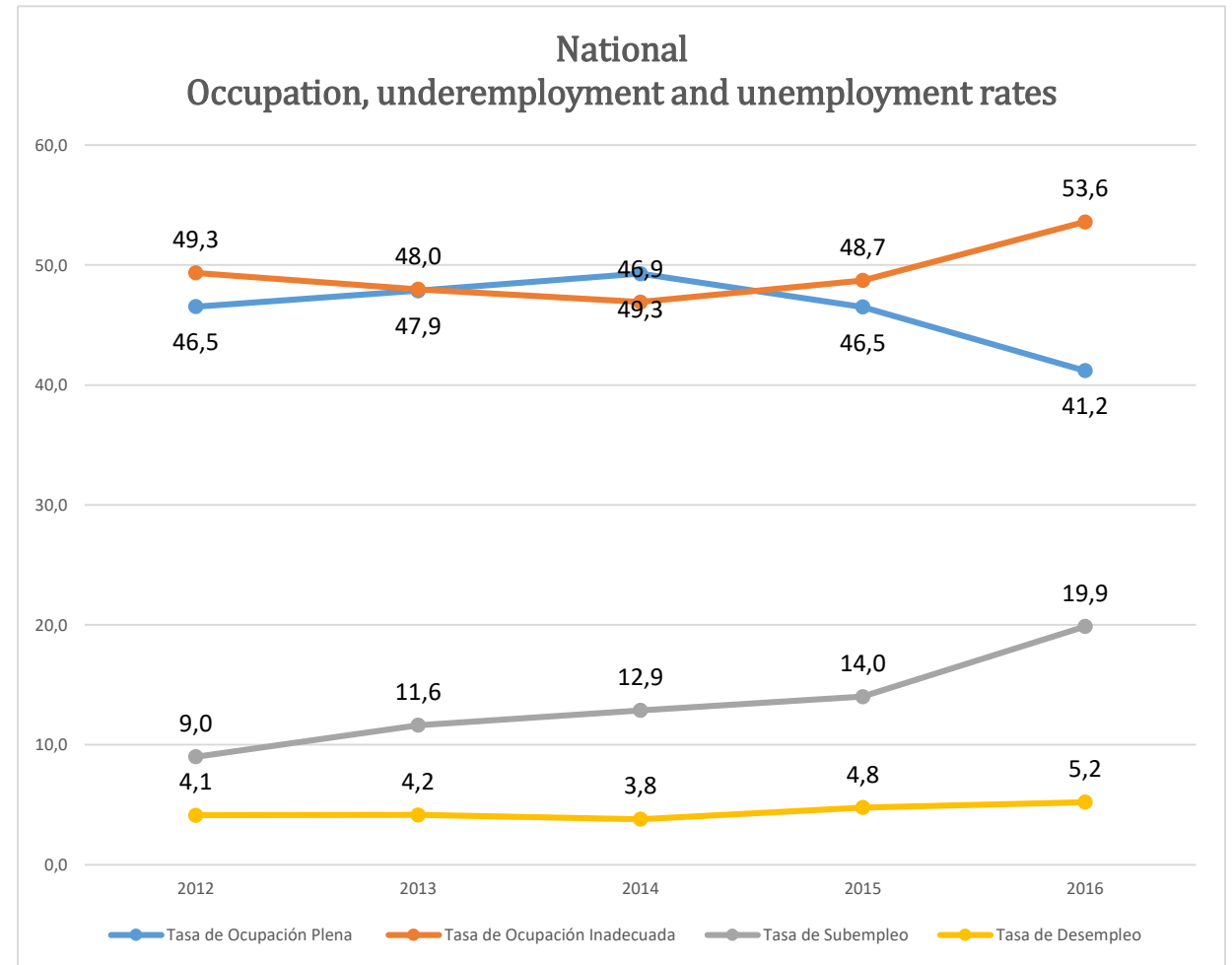
1. Introduction

1.1 Ecuadorian Labor Market

Table 1.1.3
Main Indicators

National	2012	2013	2014	2015	2016
Gross participation rate	45,6	43,8	44,6	45,7	47,1
Global participation rate	61,7	62,1	64,5	65,8	67,3
Gross occupancy rate	59,1	59,5	62,0	62,6	63,8
Global occupancy rate	95,9	95,8	96,2	95,2	94,8
Full occupancy rate	46,5	47,9	49,3	46,5	41,2
Inadequate occupancy rate	49,3	48,0	46,9	48,7	53,6
Underemployment rate	9,0	11,6	12,9	14,0	19,9
Unemployment rate	4,1	4,2	3,8	4,8	5,2
Open unemployment rate	3,1	3,0	3,0	3,7	4,1
Hidden unemployment rate	1,0	1,2	0,8	1,1	1,1

Source: INEC - ENEMDU Survey- December



Source: INEC

1. Introduction

1.2 ILO – Decent Work

Origin

- Jun 1999
- 87^a International Working Conference

General Objective

- Promote economies at the service of the people (freedom, equity, security and dignity)

Strategic Objectives (ILO, 2013)

- Workers rights
- Employment opportunities
- Social protection
- Social dialogue

1. Introduction

1.2 ILO – Decent Work

Indicators

- Employment opportunities
- Adequate income and productive work
- Decent Work Hours
- Reconciliation of work, family life and personal life
- Work that should be abolished
- Stability and work safety
- Opportunities and treatment in employment
- Safe working environment
- Social Security
- Social dialogue and representation of workers and employers

1. Introduction

1.3 European Union – Quality of Employment (EU, 2010)

Origin

- Lisbon European Council
- March 2000

General Objectives

- Improve the quality of employment in the countries of the region
- Become one of the most competitive and dynamic economies in the world

Features

- Intrinsic quality of work (level of satisfaction)
- Quality of work in the organization (absence of risks)
- Quality in the conformation of employment (salary, stability, ..)

1. Introduction

European Union – Quality of Employment

Sintetic Indicator

DP2

Bernardo Peña
Trapero 1977

- Calculate the distance of each case with respect to a theoretical reference case that represents the worst possible conditions, under the assumptions of:
- Completeness: Consider all the properties of the incident variables.
- Goodness: The simple indicators of each variable are statistically good.
- Objectivity: What is sought with the synthetic indicator can be achieved through simple indicators.
- Linearity: There is a linear relationship between the incident variables.

m	The number of cases
n	The number of variables
x_{ij}	The value of variable i for the case j
σ_i	The standard deviation of variable i
$R^2_{i,i-1,\dots,1}$	Determination coefficient of the regression X_i against $X_{i-1}, X_{i-2}, \dots, X_1$

Then:

$$DP_2 = \sum_{i=1}^n \left\{ \left(\frac{d_i}{\sigma_i} \right) (1 - R^2_{i,i-1,\dots,1}) \right\}$$

with $R^2_1 = 0$, $d_i = |x_{ij} - x_{i*}|$, x_{i*} value of reference in variable X_i

Tabla 1.3.1

Ranking de calidad de empleo al 2005

País	DP2	Ranking
Dinamarca	5,0922	1
Holanda	5,6986	2
Finlandia	8,0839	3
Luxemburgo	8,1880	4
Bélgica	9,0352	5
Austria	9,0863	6
Suecia	9,1971	7
Irlanda	9,3536	8
Reino Unido	9,4727	9
Alemania	10,1054	10
Malta	12,0746	11
Chipre	12,5906	12
España	12,6417	13
Francia	12,8994	14
Eslovenia	14,0342	15
Portugal	14,4937	16
Italia	14,8114	17
Estonia	15,4877	18
Hungría	15,6266	19
República Checa	15,6606	20

1. Introducción

1.4 Latin America – Quality of employment

Perú

Julio Gamero

2009 - 2010

- Calculate a Decent Work Index (DWI) in terms of deficit, considering indicators:
 - Basic (labor income and registration as a natural or legal person)
 - Complementary (hours of work and social security)
- Then, based on these two groups of indicators, it determines five levels of decent work:
 - (1) Employed with jobs that meet all basic and complementary indicators
 - (2) Busy with jobs that meet basic indicators only
 - (3) Employed who comply with some basic indicator but not all
 - (4) Employed who comply with any complementary indicator
 - (5) Employed who do not satisfy any indicator.

1. Introducción

1.4 Latin America – Quality of employment

Colombia
Stefano Farné
2002 - 2010

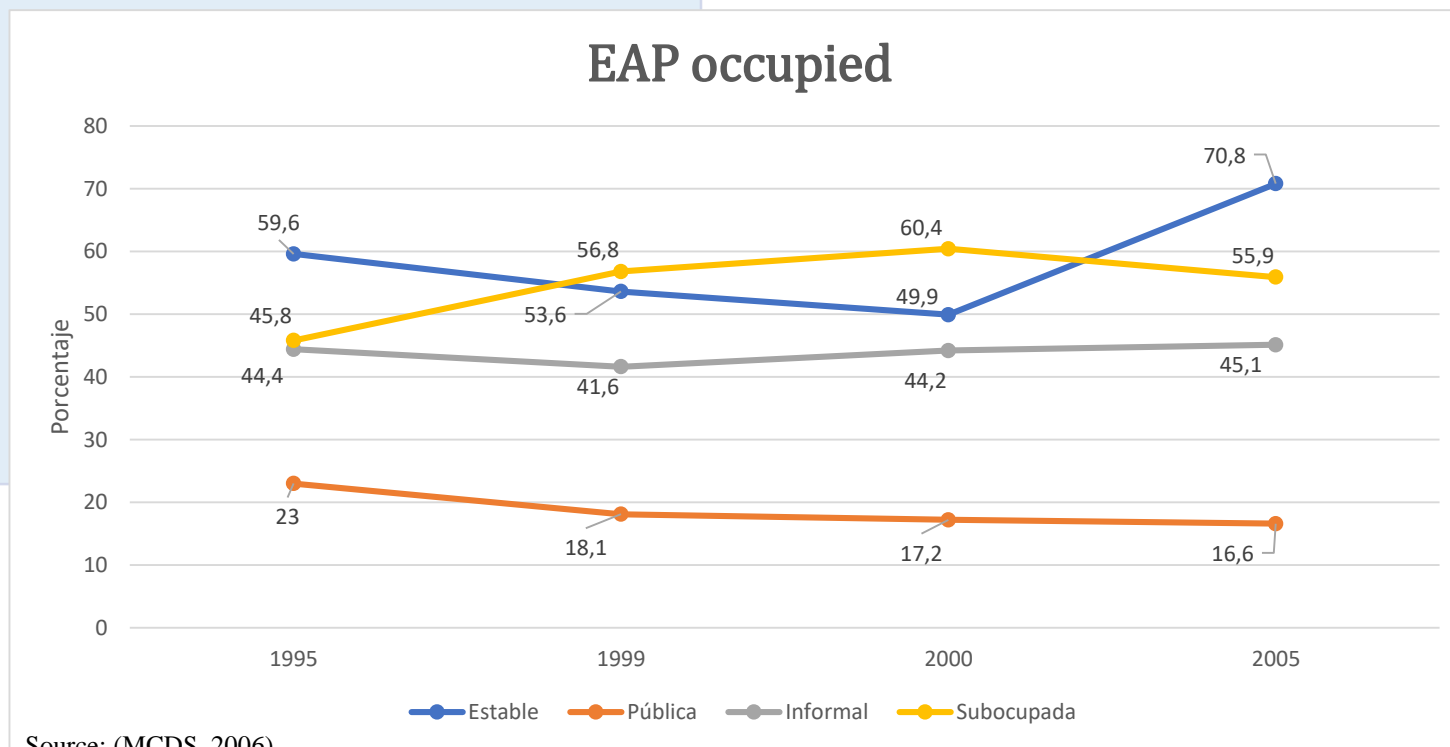
- Calculate a **CDE index from 13 variables**, using **CATPCA** analysis
- Minor workers, women in management positions, social security affiliation, formality, involuntary part-time, seniority in the same job, workplace, occupational category, minimum labor income, observed labor income, hours of work, underemployment and desire to change job
- This index for better understanding is re-scaled to values between 0 and 100, where 0 is the lowest quality and 100 the highest quality
- As a result, the QOE of 2002 compared to that of 2010 shows an improvement in salaried workers from 68.0 to 70.7 and in independent workers from 41.4 to 44.2

1. Introduction

1.5 Ecuadorian Studies – Quality of Employment

MCDS
2006

- In the analysis of the Ecuadorian labor market 1990-2005
- The QOE is a concept determined by:
 - Job stability
 - Public employment
 - Informality
 - The sub occupation and
 - Social security coverage.



Source: (MCDS, 2006)

1. Introduction

1.5 Ecuadorian Studies – Decent Work

SENPLADES
PNBV (national
plan for good
living)
2014

- Sponsor equality, cohesion and social and territorial integration in diversity
- Improve the capabilities and potential of citizenship
- Improve the quality of life of the population
- Guarantee the rights of nature and promote a healthy and sustainable environment
- Guarantee sovereignty and peace, and promote strategic insertion in the world
- **Ensure stable, fair and decent work in all its forms**
- Build and strengthen public, intercultural and common meeting spaces
- Affirm and strengthen national identity, diverse identities, multinationality and interculturality
- Ensure the observance of rights and justice
- Guarantee access to public and political participation
- Establish a social economic system, solidary and sustainable
- Build a democratic State for Good Living

Table 1.5.1. Indicators of Decent Work

Indicator Name	Value 2013	Goal 2013	Compliance status
Reach 55% of the PEA with full occupation	43,2%	46,0%	Unachieved
Reduce PEA underemployment to 40%	52,5%	47,0%	Unachieved
Reduce youth unemployment by 15%	8,6%	9,3%	Achieved
Reduce labor informality to 42%	49,3%	48,0%	Unachieved

CONTENTS

1. Introduction
2. Objectives
3. Theoretical framework
4. Discussion and Results
5. Conclusions



2. Objectives

From the
perspective of
the workers

- Establish a theoretical methodological framework for QOE
- Quantify the QOE
- Characterize the QOE

CONTENTS

1. Introduction
2. Objectives
3. Theoretical framework
4. Discussion and Results
5. Conclusions



3. Theoretical Framework

3.1 Conceptual Framework of QOE

Employment

- (CIET, 1982) Person employed. When working at a certain reference time, he performs an economically productive activity on a paid or independent basis.

Quality of Employment

- (UE, 2010), the quality of employment is a state of well-being or satisfaction in which a worker is when performing an economic activity in a specific time and space.
- (Farné, 2012) the quality of employment is a state of well-being or satisfaction that can be mainly economic, social and psychological.

3. Theoretical Framework

3.1 Conceptual Framework of QOE

Incident Factor

- Attribute, property or characteristic inherent to the employment that workers have at a given time and space

Incident Factor Classes

- Qualitative (ordinal, nominal)
- Quantitative

Nature of an Incident Factor

- Demographic
- Social
- Economic
- Etc.

3. Theoretical Framework

3.2 QOE Index- Definition (UE, 2010)

Quality of
Employment
Index

- Result of an interrelation or interaction of incident factors (X_j)

$$QOE = \varphi(X_1, X_2, \dots, X_j, \dots, X_p)$$

QOE index as a
linear
combination of
incident factors

$$QOE = \sum_{j=1}^p \beta_j f(X_j)$$

QOE = Quality of employment index

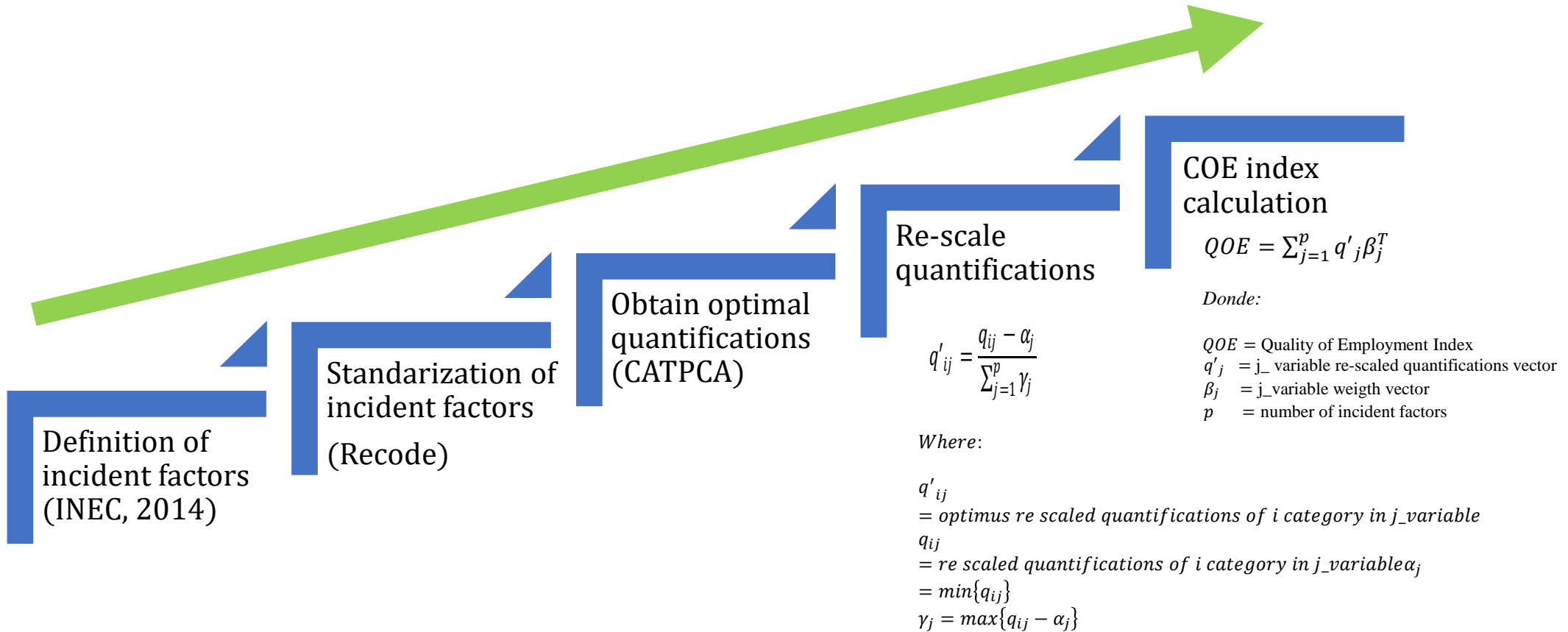
- β_j = coefficient of variable or incident factor X_j
- $f(X_j)$ = transformation of incident factor X_j
- p = number of incident factors

Assumptions for
QOE index

- Completeness: consider all incident factors.
- Goodness: the simple indicators of each incident factor are statistically good.
- Objectivity: what is sought with the index, can be achieved through simple indicators
- Linearity: there is a linear relationship between the incident factors.
- Uniqueness: the index is unique for a given case or situation.
- Exhaustivity: the index takes full advantage of the information of each incident factor.

3. Theoretical Framework

3.3 Quality of Employment – Calculation methodology

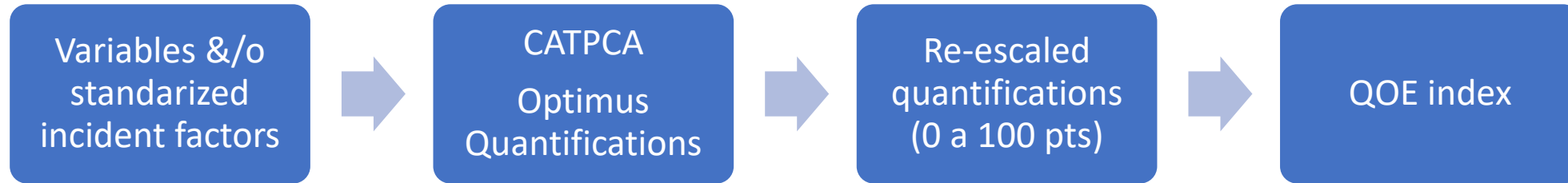


CONTENTS

1. Introduction
2. Objectives
3. Theoretical framework
4. Discussion and Results
5. Conclusions



4. Discussion and Results



4. Discussion and Results

4.1 Standardization of Incident Factors

Incident variables of QOE

Nro	Variables
1	Gender
2	Social security
3	Marital status
4	Instruction level
5	Ethnic
6	Reason for working less than 40 hours
7	Reason for working 40 hours or more
8	Reason for changing job
9	Occupation category
10	Workplace
11	How do you feel at work
12	Activity branch
13	Occupation group
14	Age
15	Working time
16	Hours of work in the past week
17	Labor income
18	Income in terms of basic wages
19	Economic sector
20	Activity condition
21	Establishment size
22	Benefits of law (13th and 14th salary)
23	Receive other benefits
24	Type of contract



Recoding quantitative variables to ordinal categorics

Labor Income	
	1 LI<250
	2 250>=LI<500
	3 500>=LI<750
	4 750>=LI<1000
	5 LI>=1000

- Age
- Labor Income
- Working Time
- Hour of work in the past week
- Establishment size

Recoding of nominal categorical variables (-) to (+)

- Social Security
- Reason for working 40 hours or more
- Occupation category
- How do you feel at work
- Economic sector
- Activity condition
- Workplace
- Occupation group
- Type of contract

	(-)	(+)	
Type of contract	6	1	Per workday
	5	2	Per hours
	4	3	For work or piecework
	3	4	Temporal contract
	2	5	Permenent contract
	1	6	Designation or nomination

4. Discussion and Results

4.2 Quality of Emploment Index – Sintax

```
CATPCA VARIABLES=rp02 Rp05a p06 p10a p15 p25 rp26 p31 rp42 rp46 rp59 rama1 rgrupo1 edad ttiempo horastra
ingreso ingresosb rsecemp rcond tamano benefley benefotr estable
/ANALYSIS=rp02(WEIGHT=1,LEVEL=NOMI) Rp05a(WEIGHT=1,LEVEL=NOMI) p06(WEIGHT=1,LEVEL=NOMI)
p10a(WEIGHT=1,LEVEL=ORDI) p15(WEIGHT=1,LEVEL=NOMI) p25(WEIGHT=1,LEVEL=NOMI)
rp26(WEIGHT=1,LEVEL=NOMI) p31(WEIGHT=1,LEVEL=NOMI) rp42(WEIGHT=1,LEVEL=NOMI) rp46(WEIGHT=1,LEVEL=NOMI)
rp59(WEIGHT=1,LEVEL=NOMI) rama1(WEIGHT=1,LEVEL=NOMI) rgrupo1(WEIGHT=1,LEVEL=NOMI)
edad(WEIGHT=1,LEVEL=ORDI) ttiempo(WEIGHT=1,LEVEL=ORDI) horastra(WEIGHT=1,LEVEL=ORDI)
ingreso(WEIGHT=1,LEVEL=ORDI) ingresosb(WEIGHT=1,LEVEL=ORDI) rsecemp(WEIGHT=1,LEVEL=NOMI)
rcond(WEIGHT=1,LEVEL=NOMI) tamano(WEIGHT=1,LEVEL=ORDI) benefley(WEIGHT=1,LEVEL=NOMI)
benefotr(WEIGHT=1,LEVEL=NOMI) estable(WEIGHT=1,LEVEL=NOMI)
/MISSING=rp02(PASSIVE,MODEIMPU) Rp05a(PASSIVE,MODEIMPU) p06(PASSIVE,MODEIMPU)
p10a(PASSIVE,MODEIMPU) p15(PASSIVE,MODEIMPU) p25(PASSIVE,MODEIMPU) rp26(PASSIVE,MODEIMPU)
p31(PASSIVE,MODEIMPU) rp42(PASSIVE,MODEIMPU) rp46(PASSIVE,MODEIMPU) rp59(PASSIVE,MODEIMPU)
rama1(PASSIVE,MODEIMPU) rgrupo1(PASSIVE,MODEIMPU) edad(PASSIVE,MODEIMPU) ttiempo(PASSIVE,MODEIMPU)
horastra(PASSIVE,MODEIMPU) ingreso(PASSIVE,MODEIMPU) ingresosb(PASSIVE,MODEIMPU)
rsecemp(PASSIVE,MODEIMPU) rcond(PASSIVE,MODEIMPU) tamano(PASSIVE,MODEIMPU)
benefley(PASSIVE,MODEIMPU) benefotr(PASSIVE,MODEIMPU) estable(PASSIVE,MODEIMPU)
/DIMENSION=2
/NORMALIZATION=VPRINCIPAL
/MAXITER=100
/CRITITER=.00001
/PRINT=CORR DESCRIP LOADING OBJECT OCORR QUANT (rp02 Rp05a p06 p10a p15 p25 rp26 p31 rp42 rp46 rp59
rgrupo1 rama1 rsecemp edad horastra ttiempo ingreso ingresosb rcond tamano benefley benefotr estable)
/PLOT= OBJECT (0) NDIM(1,2)
CATEGORY (rp02 Rp05a p06 p10a p15 p25 rp26 p31 rp42 rp46 rp59
rgrupo1 rama1 rsecemp edad horastra ttiempo ingreso ingresosb rcond tamano benefley benefotr estable) (0)
LOADING((center)) (20)
/SAVE=APPROX OBJECT TRDATA.
```

```
AGGREGATE
/OUTFILE=* MODE=ADDVARIABLES
/BREAK=pt
/TRA1_1_min = min(TRA1_1)
/TRA2_1_min = min(TRA2_1)
/TRA3_1_min = min(TRA3_1)
/TRA4_1_min = min(TRA4_1)
/TRA5_1_min = min(TRA5_1)
/TRA6_1_min = min(TRA6_1)
/TRA7_1_min = min(TRA7_1)
/TRA8_1_min = min(TRA8_1)
/TRA9_1_min = min(TRA9_1)
/TRA10_1_min = min(TRA10_1)
.
.
.
.
.
/TRA20_1_min = min(TRA20_1)
/TRA21_1_min = min(TRA21_1)
/TRA22_1_min = min(TRA22_1)
/TRA23_1_min = min(TRA23_1)
/TRA24_1_min = min(TRA24_1)
.
```

```
compute TRA1_1_esc = TRA1_1-TRA1_1_min.
compute TRA2_1_esc = TRA2_1-TRA2_1_min.
compute TRA3_1_esc = TRA3_1-TRA3_1_min.
compute TRA4_1_esc = TRA4_1-TRA4_1_min.
compute TRA5_1_esc = TRA5_1-TRA5_1_min.
compute TRA6_1_esc = TRA6_1-TRA6_1_min.
compute TRA7_1_esc = TRA7_1-TRA7_1_min.
compute TRA8_1_esc = TRA8_1-TRA8_1_min.
compute TRA9_1_esc = TRA9_1-TRA9_1_min.
compute TRA10_1_esc = TRA10_1-TRA10_1_min.
.
.
.
.
.
compute TRA20_1_esc = TRA20_1-TRA20_1_min.
compute TRA21_1_esc = TRA21_1-TRA21_1_min.
compute TRA22_1_esc = TRA22_1-TRA22_1_min.
compute TRA23_1_esc = TRA23_1-TRA23_1_min.
compute TRA24_1_esc = TRA24_1-TRA24_1_min.
```

```
AGGREGATE
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/BREAK=pt
/TRA1_1_max = max(TRA1_1_esc)
/TRA2_1_max = max(TRA2_1_esc)
/TRA3_1_max = max(TRA3_1_esc)
/TRA4_1_max = max(TRA4_1_esc)
/TRA5_1_max = max(TRA5_1_esc)
/TRA6_1_max = max(TRA6_1_esc)
/TRA7_1_max = max(TRA7_1_esc)
/TRA8_1_max = max(TRA8_1_esc)
/TRA9_1_max = max(TRA9_1_esc)
/TRA10_1_max = max(TRA10_1_esc)
.
.
.
.
.
/TRA20_1_max = max(TRA20_1_esc)
/TRA21_1_max = max(TRA21_1_esc)
/TRA22_1_max = max(TRA22_1_esc)
/TRA23_1_max = max(TRA23_1_esc)
/TRA24_1_max = max(TRA24_1_esc)
.
```

```
compute sum_maximos = sum(tra1_1_max to
tra24_1_max).
```

```
compute indicev1 = TRA1_1_esc / sum_maximos.
compute indicev2 = TRA2_1_esc / sum_maximos.
compute indicev3 = TRA3_1_esc / sum_maximos.
compute indicev4 = TRA4_1_esc / sum_maximos.
compute indicev5 = TRA5_1_esc / sum_maximos.
compute indicev6 = TRA6_1_esc / sum_maximos.
compute indicev7 = TRA7_1_esc / sum_maximos.
compute indicev8 = TRA8_1_esc / sum_maximos.
compute indicev9 = TRA9_1_esc / sum_maximos.
.
.
.
.
.
compute indicev20 = TRA20_1_esc / sum_maximos.
compute indicev21 = TRA21_1_esc / sum_maximos.
compute indicev22 = TRA22_1_esc / sum_maximos.
compute indicev23 = TRA23_1_esc / sum_maximos.
compute indicev24 = TRA24_1_esc / sum_maximos.
```

```
compute indice = sum(indicev1 to indicev24).
```

4. Discussion and Results

4.3 Optimal Quantifications and Re_scaled

CATPCA
Optimal
quantifications

Optimal
quantifications
Re-escaled

Cuantificaciones óptimas							MIN		
VARIABLES INCIDENTES	Categorías	2012	2013	2014	2015	2016	2012	2013	
Género	Mujer	-1.2076	-1.2237	-1.2983	-1.3110	-1.4103	█	-1.208 █	-1.224
	Hombre	0.8441	0.8317	0.7236	0.7030	0.5099			
Seguridad social	Ninguno	-0.6405	-0.6641	-0.7223	-0.7414	-0.7039	█	-1.374 █	-1.273
	Seguro MSP	-1.0029	-0.9866	-1.0231	-1.3287	-0.8213			
	Seguros Municipales		1.5666	-1.8450	-1.0373				
	AUS	-1.3736	-1.2730	-1.1544	0.4062				
	Seguro privado sin hospitalización	0.3282	-0.0368	0.0386	0.3349	-0.3360			
	Seguro privado con hospitalización	-0.0129	0.2815	0.2198	0.1774	0.2501			
	Seguro ISSFA ISSPOL	1.3085	1.4861	1.3534	1.3215	1.3067			
	IESS Seguro Campesino	-1.1192	-1.1057	-1.1588	-1.1399	-1.0869			
	IESS Seguro Voluntario	0.1045	0.0082	-0.0323	-0.0704	-0.2152			
	IESS Seguro General	1.4556	1.4412	1.3460	1.3344	1.4266			
Estado civil	Casado(a)	-0.9148	-0.9178	-0.8742	-0.8279	-0.8154	█	-1.125 █	-1.107
	Separado(a)	0.4095	0.6173	0.1351	0.0114	-0.0810			
	Divorciado(a)	0.3163	0.1549	-0.2401	-0.1982	-0.2540			
	Viudo(a)	-1.1246	-1.1066	-1.4603	-1.5717	-1.5552			
	Unión libre	-0.2794	-0.2037	0.0392	-0.0013	-0.0254			
	Soltero(a)	1.4321	1.4754	1.5527	1.6164	1.6041			
Nivel de instrucción	Ninguno	-1.7207	-1.6496	-2.0005	-2.0512	-1.9931	█	-1.721 █	-1.650
	Centro de alfabetización	-1.5650	-1.6349	-2.0005	-2.0512	-1.8903			
	Primaria	-0.9085	-0.8906	-1.0251	-1.0617	-1.0773			
	Educación Básica	-0.1061	-0.0653	0.2542	0.1958	0.1620			
	Secundaria	0.2820	0.2586	0.2542	0.1958	0.1620			
	Educación Media	0.5280	0.6016	1.1218	1.2255	1.2044			
	Superior no universitario	1.3969	1.3006	1.1218	1.2255	1.2044			
	Superior Universitario	1.5245	1.6143	1.2747	1.2255	1.2044			

4. Discussion and Results

4.4 QOE Index Results

QOE Index per ENEMDU Domains of Study

```

compute tota=1.
variable labels tota 'Total'.
value labels tota 1 ' '.
if (ciudad=170150 and area=1) ciu=1.
if (ciudad=090150 and area=1) ciu=2.
if (ciudad=010150 and area=1) ciu=3.
if (ciudad=070150 and area=1) ciu=4.
if (ciudad=180150 and area=1) ciu=5.
if (area=1) nac=1.
if (area=2) nac=2.
variable labels ciu 'Ciudades'.
variable labels nac 'Nacional'.
value labels ciu 1 'Quito' 2 'Guayaquil' 3 'Cuenca' 4 'Machala' 5 'Ambato'.
value labels nac 1 'Urbano' 2 'Rural'.
weight by fexp.
compute filtro = (conductn>=1 and conductn<=6 and p03>=15).
filter by filtro.
compute indicep = indice*100.
tables
/observation indicep



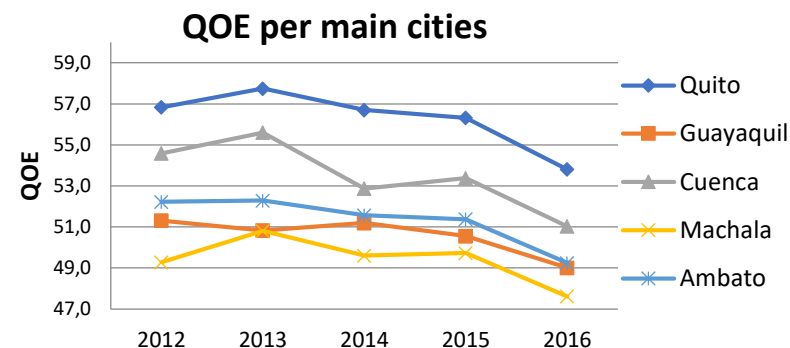


```

Tabla 4.4.1
QOE Index

		2012	2013	2014	2015	2016	Promedio
Ciudad	Quito	56,8	57,7	56,7	56,3	53,8	56,3
	Guayaquil	51,3	50,8	51,2	50,6	49,0	50,6
	Cuenca	54,6	55,6	52,9	53,4	51,0	53,5
	Machala	49,3	50,8	49,6	49,7	47,6	49,4
	Ambato	52,2	52,3	51,6	51,4	49,2	51,3
Área	Urbana	51,0	51,3	50,6	50,3	48,0	50,2
	Rural	34,3	35,6	38,1	36,7	35,2	36,0
	Nacional	45,4	46,2	46,5	45,9	43,7	45,6

Elaborado por: Carlos Obando



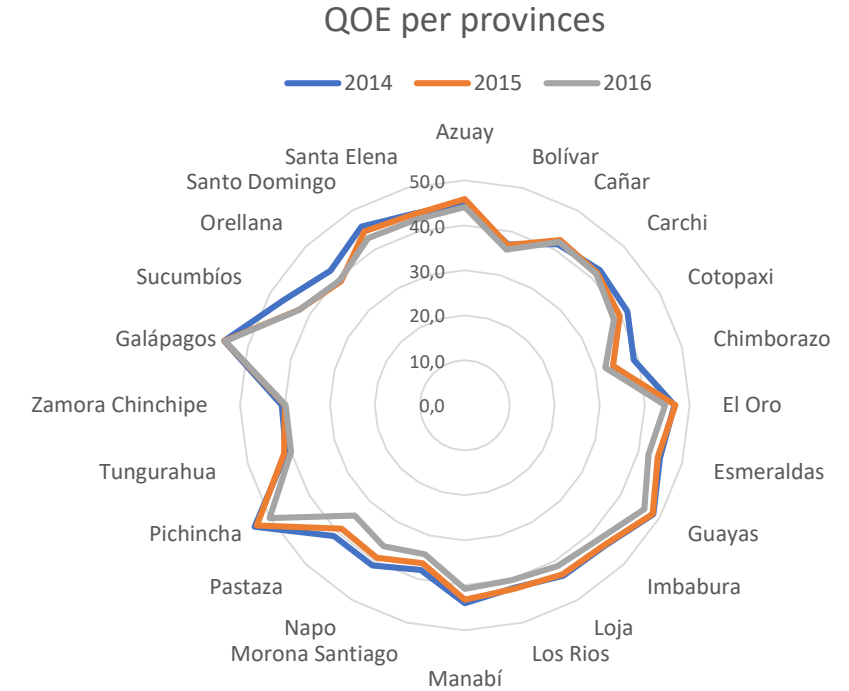
4. Discussion and results

4.4 QOE Index results

QOE Index per Provinces

Table 4.4.2
QOE Index

Province	2012	2013	2014	2015	2016	Mean
Azuay	45,7	45,2	44,9	45,8	44,1	45,1
Bolívar	34,5	33,5	37,0	36,9	35,8	35,5
Cañar	37,2	38,3	41,3	42,5	42,0	40,3
Carchi	42,4	41,7	42,5	41,7	41,3	41,9
Cotopaxi	38,2	42,1	41,7	39,8	38,3	40,0
Chimborazo	36,2	33,2	8,9	34,1	32,4	35,0
El Oro	47,4	46,9	46,6	46,8	44,6	46,5
Esmeraldas	42,6	42,4	45,0	44,4	42,3	43,3
Guayas	47,8	48,4	48,4	48,2	46,1	47,8
Imbabura	43,7	43,3	44,1	43,9	42,2	43,4
Loja	40,7	40,7	43,8	43,4	41,3	42,0
Los Rios	41,2	40,3	42,0	42,3	40,3	41,2
Manabí	41,6	43,8	44,0	43,2	40,8	42,7
Morona Santiago	33,4	37,5	37,9	36,3	34,3	35,9
Napo	49,0	44,5	41,1	39,2	36,2	42,0
Pastaza	41,5	43,0	41,1	38,8	34,6	39,8
Pichincha	52,8	55,7	54,0	53,4	50,2	53,2
Tungurahua	41,6	42,7	41,1	41,6	40,0	41,4
Zamora Chinchipe	35,8	40,0	40,7	40,0	39,8	39,3
Galápagos			55,4	55,3	55,2	55,3
Sucumbíos	42,8	46,2	46,7	42,5	42,5	44,1
Orellana	36,2	42,3	42,3	39,0	39,3	39,8
Santo Domingo	39,9	44,0	45,9	44,7	43,0	43,5
Santa Elena		41,6	44,1	44,0	42,7	43,1
Zonas no delimitadas		35,6	37,4	38,3	36,8	37,0



4. Discussion and results

4.5 Statistical validity of results

Estimations

Year 2016

QOE Index	Estimación	Error estándar	confianza		Coeficiente de variación	Efecto de diseño	Tamaño de la población ocupada
			Inferior	Superior			
Nacional	43,7420	,12776	43,4915	43,9925	,003	2,563	7463579

QOE Index Area	Estimación	Error estándar	95% de intervalo de confianza		Coeficiente de variación	Efecto de diseño	Tamaño de la población ocupada
			Inferior	Superior			
Urbana	47,9997	,16695	47,6725	48,3270	,003	3,074	4971669
Rural	35,2473	,16992	34,9142	35,5804	,005	1,938	2491910

QOE Index Cities	Estimación	Error estándar	95% de intervalo de confianza		Coeficiente de variación	Efecto de diseño	Tamaño de la población ocupada
			Inferior	Superior			
Quito	53,8066	,46424	52,8959	54,7172	,009	2,317	828696
Guayaquil	49,0117	,39880	48,2294	49,7940	,008	2,146	1097582
Cuenca	51,0285	,63667	49,7795	52,2774	,012	,927	183845
Machala	47,6138	,61615	46,4052	48,8225	,013	,576	114054
Ambato	49,2451	,52722	48,2109	50,2794	,011	,324	92201

QOE index Provinces	Estimación	Error estándar	95% de intervalo de confianza		Coeficiente de variación	Efecto de diseño	Tamaño de la población ocupada
			Inferior	Superior			
Azuay	44,0726	,45835	43,1741	44,9711	,010	1,897	410719
Bolívar	35,8458	,90412	34,0735	37,6181	,025	1,636	95637
Cañar	41,9829	,64389	40,7206	43,2451	,015	,991	115496
Carchi	41,3307	,62221	40,1110	42,5504	,015	,685	78082
Cotopaxi	38,2677	,37579	37,5310	39,0043	,010	,740	241042
Chimborazo	32,3638	,51662	31,3510	33,3765	,016	1,696	273471
El Oro	44,5814	,35508	43,8854	45,2775	,008	,987	299338

CONTENTS

1. Introduction
2. Objectives
3. Theoretical framework
4. Discussion and Results
5. Conclusions



5. Conclusions and Recommendations

Conclusions

- There are three visions of the QOE (State, Company, Worker)
- The QOE is a state of well-being or satisfaction
- The QOE can be measured by calculating an Index using CATPCA
- The average QOE index for Ecuador is 45.6 (2012-2016)
- In Ecuador, the QOE tends to deteriorate. In the last year the CDE index fell by 4.8%
- The cities with the best QOE are Quito and Cuenca
- The provinces with the best QOE are Galapagos and Pichincha

Recommendations

- To recommend to INEC to use the methodology proposed to calculate the QOE index annually
- To recommend to the national and international statistical community the use of this methodology for the calculation of the QOE index.
- To recommend to the national and international statistical community the use of this methodology for uses, not only for economic purposes but also for others (Health, Education, etc.).

ii Thanks!!