

2024-2학기 고려대학교 정부학연구소 콜로키움

행정 목표 측정과 행정 목표 간의 관계

Data: Zillow Transaction Datasets & US Census

Method: GIS 분석과 Goal Programming

발표: 방인식 (서울과학기술대학교 행정학과)



The concurrent existence of goal conflict and goal synergy in public programs: a case study of the Pennsylvania's Well Plugging Program

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ABSTRACT

Do public administrators simultaneously enhance or trade off goals in public programs? Responding to stakeholders' requests while facing limited budgets poses challenges for public decision-makers in fully improving all goals. This research explores the juxtaposition of conflicting or synergistic goals that administrators might encounter after revising a public program. Using Pennsylvania's Well Plugging Program as a case study, it demonstrates potential changes in goals related to energy site remediation when administrators adopt an objective approach to maximize policy outcomes. The findings indicate that the revised program is expected to increase benefits for impoverished populations near abandoned wells. However, administrators must navigate trade-offs, as the new program may prioritize plugging less environmentally risky wells not selected in the current program. This research sheds light on the simultaneous existence of conflicting and synergistic relations among multiple goals in public programs designed for socially optimal performances.

ARTICLE HISTORY

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KEYWORDS

Goal conflict; goal synergy;
goal balance; inclusive public
decision-making;
Pennsylvania's Well Plugging
Program

발표 목적

I. 행정 목표 간의 관계 이해

II. GIS 분석을 통한 행정 목표 측정

III. 행정 목표 간의 갈등 해소 방안

행정 가치의 복수성 (Multiplicity)



행정 목표 간의 관계

1

Goal Synergy

Goals Better Off

2

Goal Degradation

Both Goals Worse Off

Goal Relationship

3

Goal Tradeoff

One Goal Better Off,
Another Goal Worse Off.

4

Goal Neutrality

Both Goals are Independent

기존 연구

I. 행정 목표 간의 관계 개념 정립

II. 행정 목표 간 갈등 발견 (양적/질적)

III. 행정 목표 간의 갈등 해소 전략 제시

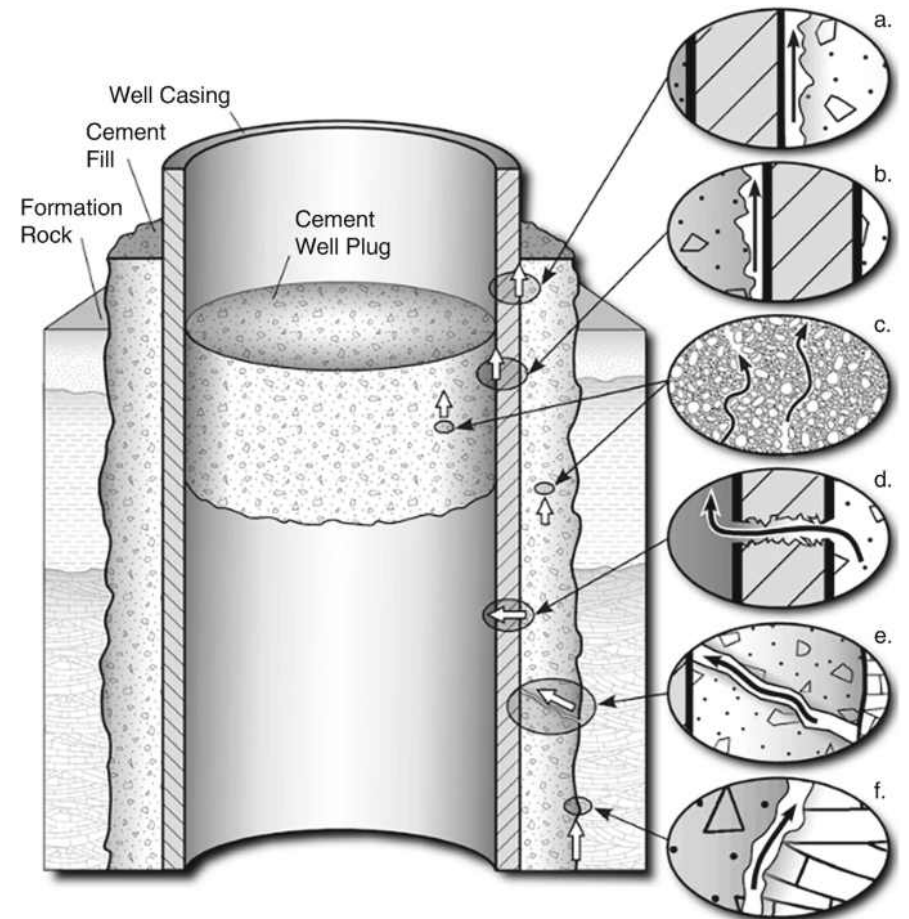
행정 목표 측정과 행정 목표 간의 관계

연구 질문

“Do public administrators simultaneously enhance or trade off goals in public programs?”

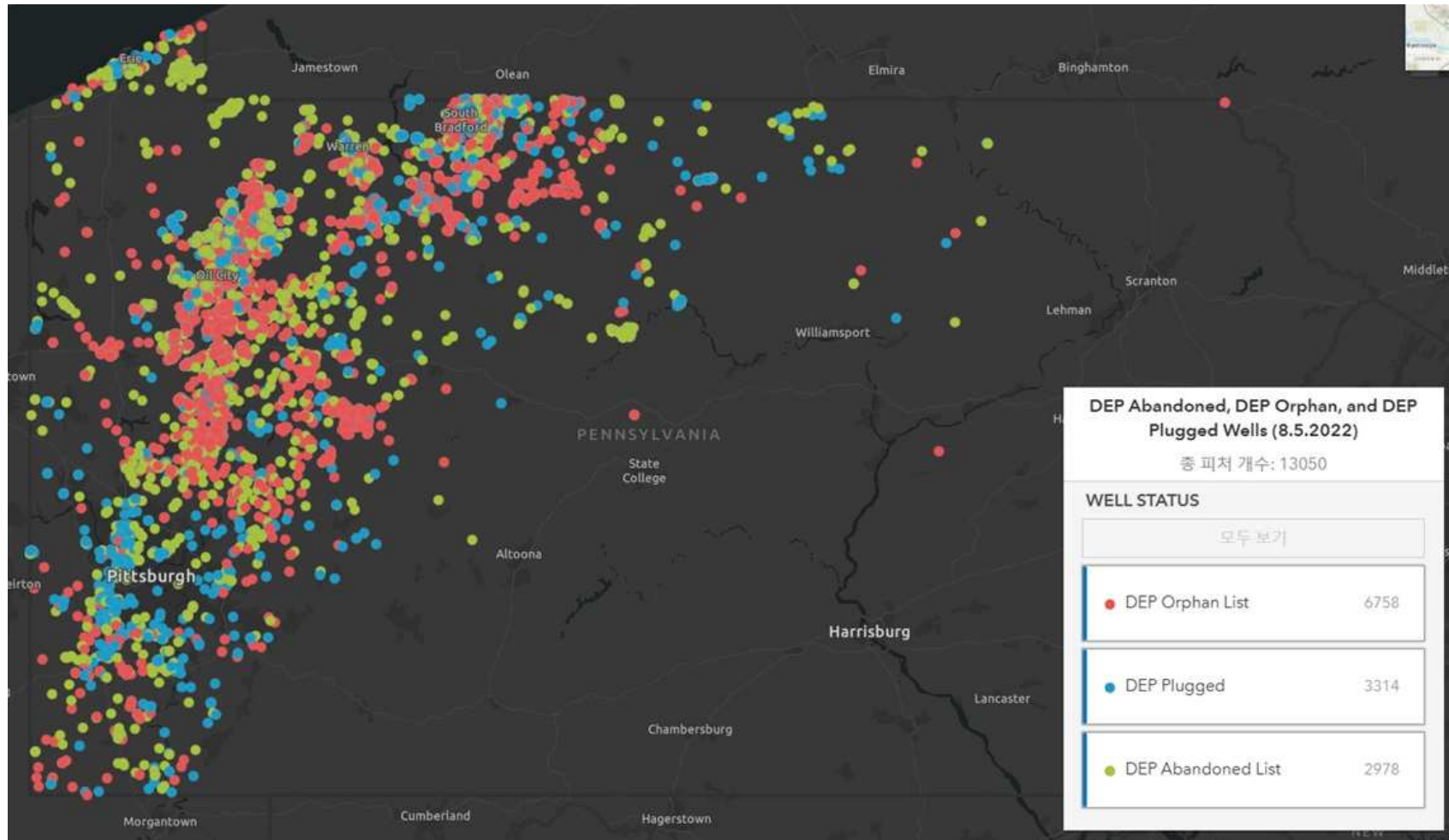
행정 목표 측정과 행정 목표 간의 관계

연구 사례



행정 목표 측정과 행정 목표 간의 관계

연구 사례



행정 목표 측정과 행정 목표 간의 관계

연구 사례



DEP OFFICE OF OIL AND GAS MANAGEMENT WELL SCORING SHEET

API No.:	GPS Latitude:	Scoring Date:
Farm Name:	GPS Longitude:	Quad Section: -
Well #:	DEP Inspector:	Quad Name: -
County: -	District Office: -	Well Classification: -
Municipality:	Well Type: -	

Human Receptors	Choose Up To 5
Gas in occupied structure with similar isotopic signature or believed to be associated with well*	50
Oil/brine in occupied structure believed to be associated with well*	50
Soil gas within 200 feet of structure believed to be associated with well	25
Gas in water supply	25
Oil/brine in water supply	15
	0
Ecological Receptors	Choose Up To 2
Liquids (oil/brine) to stream or wetland	25
Oil/brine seep (discharge not from wellbore)	10
	0
Well Site Hazards	Choose Up To 4
Any ambient H ₂ S detection	25
Any ambient LEL readings ≥ 10%	25
Sustained ambient LEL <10%	10
Unstable equipment, open pits, E&S issues/washouts	10
Evidence of historical liquid spills not associated with well integrity breach	5
	0
Well Integrity	Choose Up To 4
Gas present outside surface casing/present in stream or liquid flow to surface	25
Measurable annular flow of gas	15
Wellhead pressure observed	10
Severe corrosion (pitting) on well component that possibly contains pressure or fluids	10
	0
Coal/Mining Status	Choose Up To 1
Well within active underground mine (sealed or undergoing mining i.e., longwall district) ¹	25
Within abandoned mined area	25
Permitted but not yet mined (intact coal/rock) ¹	10
Workable coal present but not permitted	5
	0
Setback/Surrounding Area	Choose Up To 4
Well within 200 feet of occupied building or water supply well	10
Well located in known gas migration area but not believed to be source	5
Well within 100 feet of stream	5
Well within 300 feet of any wetland >1 acre in size	5
	0
Final Score	0

Add remarks to Investigation Form

¹Determine if situation justifies an emergency remediation or plugging contract

¹Notify the Coal Operator upon confirmation of well location.

행정 목표 (효율성) 측정과 Ztrax 활용

"The Ztrax is the nation's largest real estate database"

**What's
Inside?**

Public Records

More than 400 million across 2,750+ counties

Legal Documents

Deed transfers, mortgages, foreclosures, property tax delinquencies

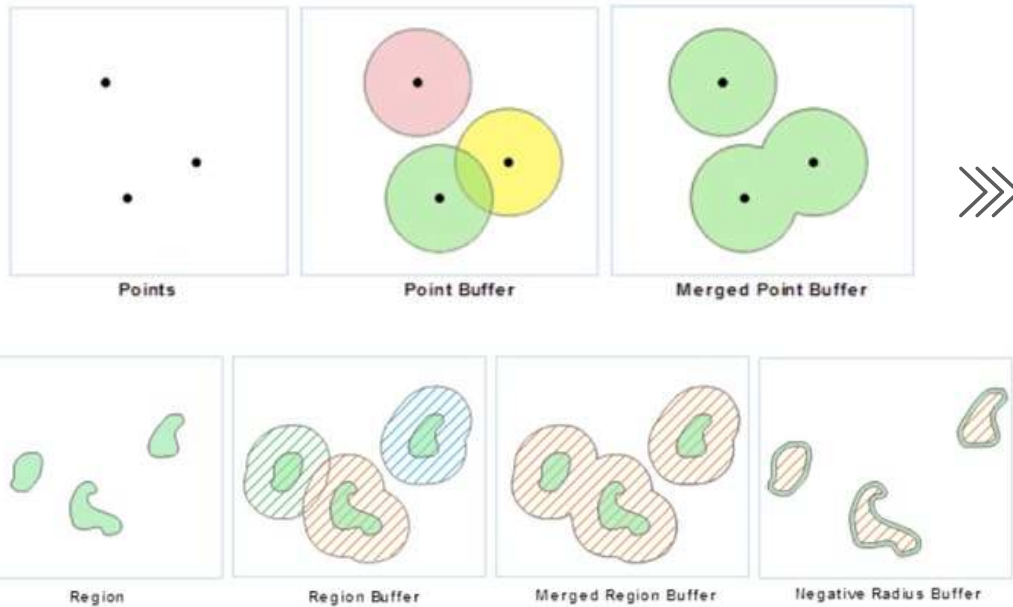
Property Characteristics

Geographic information, prior valuations for 150 million parcels

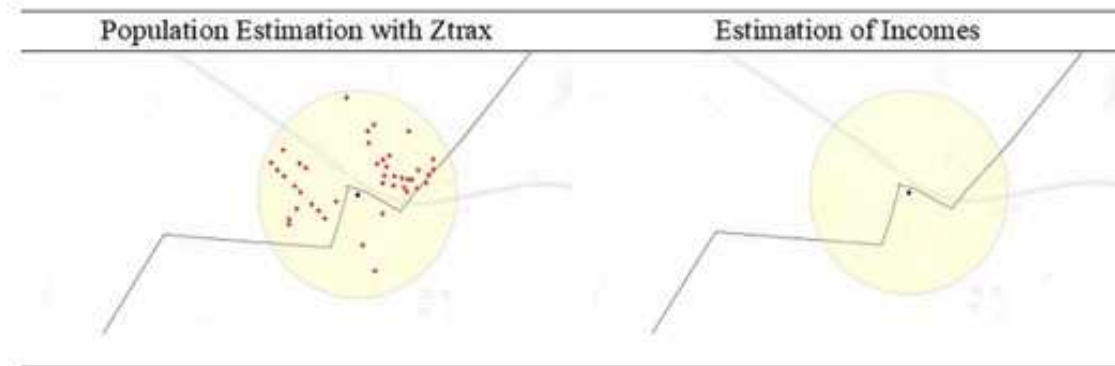
행정 목표 측정과 행정 목표 간의 관계

행정 목표 측정: GIS 분석

Buffer Analysis



Application



행정 목표 측정과 행정 목표 간의 관계

복수의 행정 목표 再구성

Goal A: Technical Risk Reduction
(High-Risk Well Plugging)

Goal B: Efficiency
(Maximization of Protected Population)

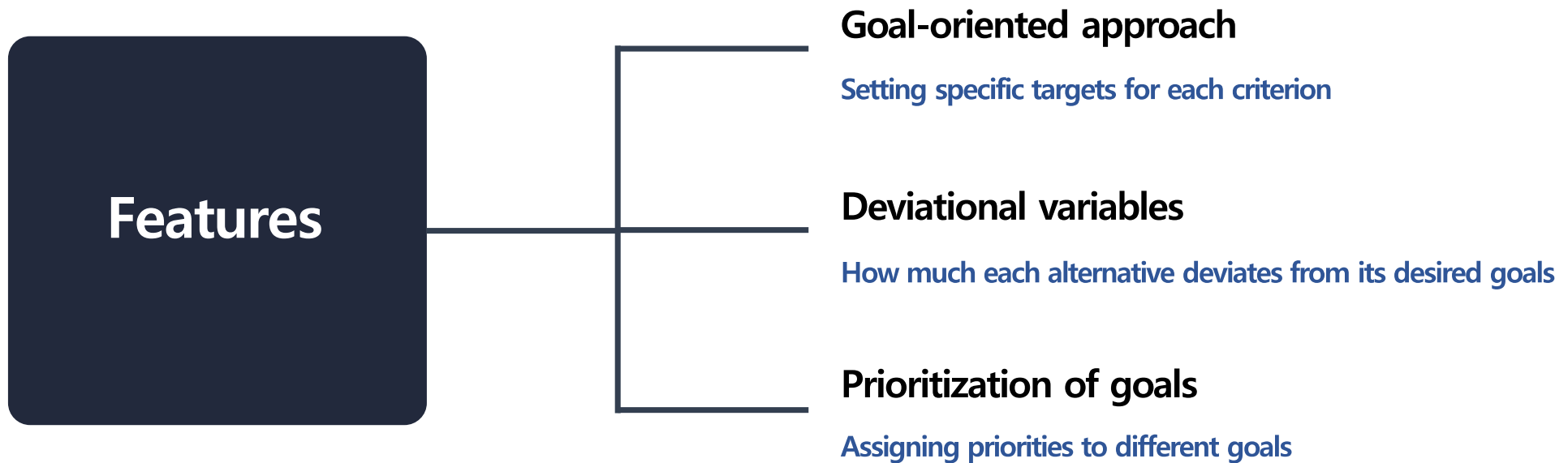
Goal C: Environmental Justice
(Support to Low-Income People)



Public
Administrator

행정 목표 간의 관계: Goal Programming(GP)

"GP aims to find a solution that best satisfies a set of pre-defined goals"



행정 목표 간의 관계: Goal Programming

	Normalized Variables	Targets	Deviations	Weights
Goal A: Technical Risk Reduction (High-Risk Well Plugging)	X_i	1	$(X_i - 1)$	α
Goal B: Efficiency (Maximization of Protected Population)	Y_i	1	$(Y_i - 1)$	β
Goal C: Environmental Justice (Support to Low-Income People)	Z_i	0	$(Z_i - 1)$	γ

행정 목표 측정과 행정 목표 간의 관계

분석 결과

Weights for Current WPP

$\alpha=1$

$\beta=0$

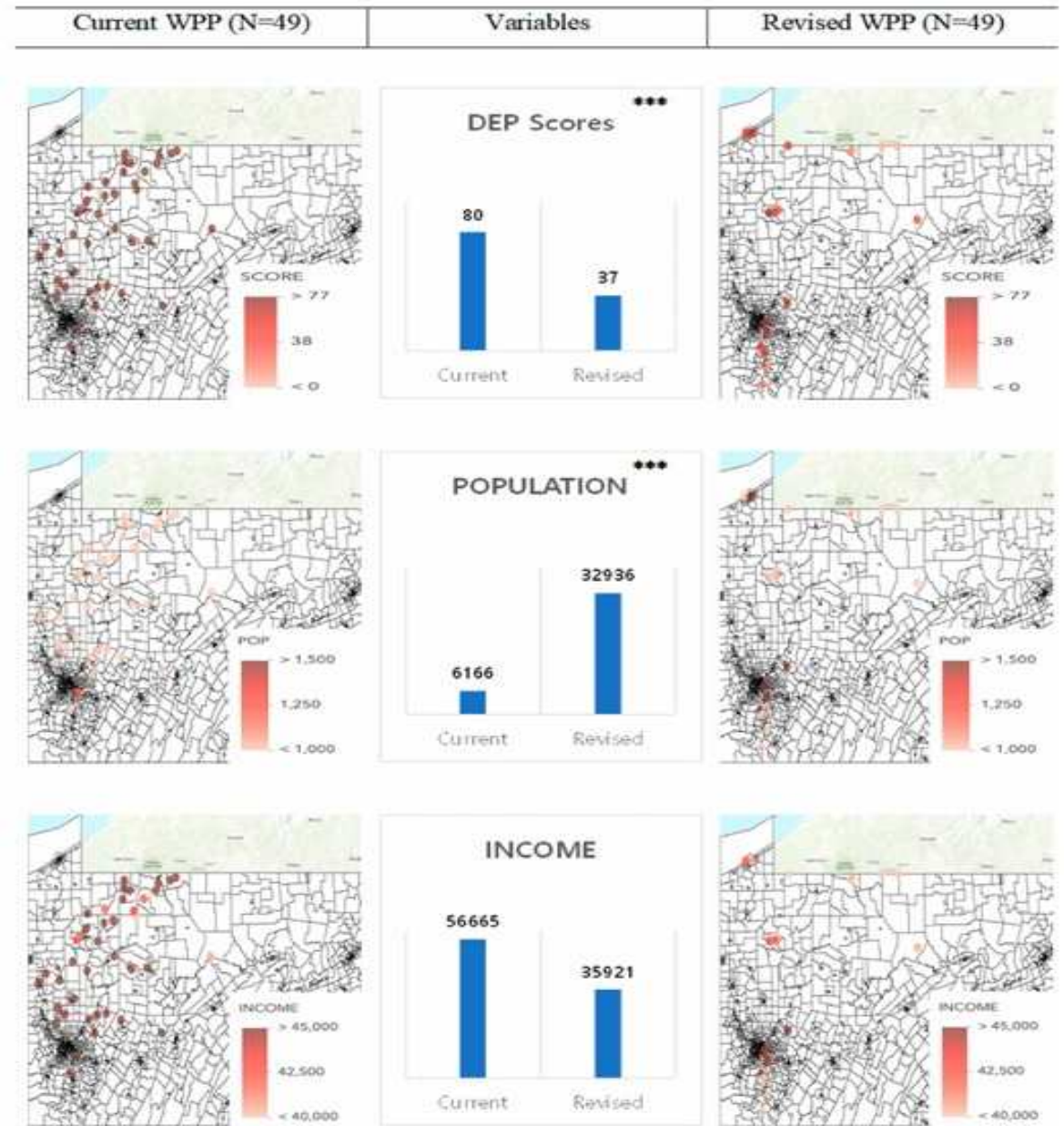
$\Gamma=0$

Weights for Revised WPP

$\alpha=0.12$

$\beta=0.16$

$\Gamma=0.72$



결론



Worse Off



Better Off



Better Off

Goal Balancing!

행정 목표 측정과 행정 목표 간의 관계

토론

의의

한계점

새로운 연구