Students' intentions to work with underserved populations and in interprofessional teams:

Knowledge, attitudes, self-efficacy, and empathy

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Background

- Increasing cost of health care
- Increased need for efficiency of service delivery
- Proposed solution: Increase health care professionals' abilities to work together in interprofessional teams when providing care to patients
  - (Ferlie & Shortell, 2001)

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Interprofessional Education (IPE)

- Work in teams with members from different professions
- Students learn multiple roles
- Becoming a more important and relevant skill

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Interprofessional Education, cont.

- Improves student learning of material, patient outcomes, and patient satisfaction with care
  - (Carpenter *et al.,* 2006)
- Improves health care professionals' attitudes toward other health care professions
  - (Carpenter, 1995; Carpenter & Hewstone, 1996; Goelen *et al*., 2006; Hewstone *et al.,* 1994; Luecht *et al.,* 1990)
- Reinforces importance of teamwork in patient care
  - (Anderson *et al.*, 2006; Rodger *et al*., 2005)

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Service Learning

- Students work in community-based clinics
- Hands-on learning in real-life situations

- Provide services to those with limited access

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Service Learning, cont.

- Increases attitudes related to volunteering
  - (Gadbury-Amyot *et al.*, 2006)
- Increases awareness of health disparities
  - (Gadbury-Amyot *et al.*, 2006)
- Reciprocal, with benefits to both recipient (community) and provider (students/faculty)
  - (Bringle, et al., 2004)
- Increases comfort and skills in working with underserved populations

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Empathy

- Medical students become less empathetic
  - (Hojat *et al.*, 2004)
- Best learned through practice
  - (Kramer *et al.*, 1989)
- Patient perceptions of empathy associated with better outcomes
  - (Price *et al.*, 2006)
- Related to multicultural competence
  - (Constantine, 2000)

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Attitudes toward the underserved

- "It has raised my awareness of underserved populations' need for healthcare as well as increased my understanding of other cultures"
- "Made me aware of healthcare disparity between rich and poor"
- "I learned quite a bit about health care disparities."

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Reactions to helping the underserved

- "Working on the farms has opened me up to a side of medicine I hadn't considered or experienced."
- "I have learned how to better serve an underprivileged community & learned about medicine."
- "It has been beneficial to experience the culture of migrant farm workers"

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Attitudes toward interprofessional work

- "I felt we worked well as a team"
- "I learned more about some of the different professions that we worked with and also learned more about treatment options for various diseases."

Best part of experience:

- "Actually being told by the MD what he did to help the pt – that never happened before"
  - (Nursing student)

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Guiding Concerns

- What do the students learn?
- What types of students are attracted to this experience?
- Does this experience change students, and if so, how?
  - Attitudes, intentions, self-efficacy, empathy
- Are there important discipline differences?

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Our collaborative process:

- Partnerships established
- Review of the literature to identify critical constructs
- Collaboration and communication emphasized in IPE; knowledge, self-efficacy, attitudes, intentions; empathy; history of volunteering/service
- Logic model
- Research questions and methods

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Design

- Participation from all 5 disciplines
- Longitudinal design
  - 3 waves across AY 06-07
  - Anonymous survey with matching through “evaluation code”
- Emphasis on intention and short-term change rather than actual long-term behavior change

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Research Questions

- What are students' baseline levels of:
  - Self-efficacy for communicating with other members of an IPE team
  - Health-care empathy
  - Knowledge (IPE, poverty impacts on health)
  - Attitudes regarding IPE
- What are students' baseline intentions for working with underserved or uninsured populations, within interprofessional teams, and in urban versus rural settings
- Differences across 5 IPE groups
- Baseline and over one academic year: predictions of intentions

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Longitudinal Methods

499 students surveyed Aug 06

Feedback from service learning

479 students surveyed Jan 07

Feedback from service learning

466 students surveyed May 07

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Measures

- Items for attitudes, self-efficacy, and knowledge
- Adapted from:
  - Pollard, K., Miers, M. E., & Gilchrist, M. (2005)
  - McNair, R., Stone, N., Sims, J., & Curtis, C. (2005)
  - Written by Fuhrel-Forbis & O'Connell
- 5-point scale, SA to SD; some reversed
- Lower scores indicate *more*, or *positive*, or *greater*: attitudes, SE, Knowledge.

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Empathy

- Jefferson Scale of Physician Empathy
  - (Hojat *et al.*, 2001)
  - Pre: student version
  - Mid & Post: physician's version
- 20 items, 5-point scale
- Higher score = more empathy
- *"A health care provider who is able to view things from another person's perspective can render better care"*
- *"I try to think like my patients in order to render better care"*

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Intentions – 5 items

- I am likely…
  - To spend some time in a rural health-setting after graduation
  - To spend some time in an urban setting after graduation
- I am willing…
  - To work with underserved populations
  - To provide services to patients who cannot pay
  - To work in interprofessional teams

(Each uses a 5-point scale)

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Distribution between programs (at baseline) of number of students who had volunteered in the past.

Professional Program	Volunteered in past, n (%)	Did not volunteer in past, n (%)	Total
Medicine	57 (96.6%)	2 (3.4%)	59
Dental Medicine	37 (97.4%)	1 (2.6%)	38
Pharmacy	66 (71.7%)	26 (28.3%)	92
Nursing	226 (87.3%)	33 (12.7%)	259
Physician's Assistant	43 (93.5%)	3 (6.5%)	46
Total	429 (86.8%)	65 (13.2%)	494

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Scale Descriptives – Baseline

Predictor Variable	# Items	Scale Mean (sd)	Scale Min	Scale Max	Reliability (Chronbach's α)
Knowledge *	4	2.444 (0.033)	1.823	2.754	0.607
Attitudes *	21	2.179 (0.029)	1.808	3.327	0.827
Self-efficacy *	6	2.165 (0.001)	1.992	2.431	0.806
Empathy	20	61.91 (7.82)	39.00	80.00	0.875

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Descriptives by program

Scale	Medical N = 60	Dental N = 38	Pharmacy N = 92	Nursing N=261	PA N = 46
Knowledge	2.56 (0.61)	2.40 (0.54)	2.38 (0.53)	2.48 (0.51)	2.31 (0.53)
Attitudes	2.03 [a] (0.34)	2.02 [b] (0.36)	2.21 (0.36)	2.25 [a b c] (0.34)	2.03 [c] (0.34)
Self-Efficacy	1.91 [a b] (0.48)	1.93 [c d] (0.36)	2.34 [a c e] (0.58)	2.22 [b d] (0.47)	2.04 [e] (0.53)
Empathy	63.85 [a] (7.51)	61.32 (7.52)	57.57 [a b c] (7.71)	62.60 [b] (7.51)	64.67 [c] (7.40)

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Outcomes by program

Intentions to…	Medical N = 60	Dental N = 38	Pharmacy N = 92	Nursing N=261	PA N = 46
Work in rural environment	2.93 (1.10)	2.92 (1.08)	2.89 (1.09)	3.08 (1.03)	2.96 (0.82)
Work in urban environment	2.33 (0.90)	2.55 (0.65)	2.91 (0.91)	2.28 (0.79)	2.52 (0.75)
Provide services to those who can't pay	1.75 [a] (0.68)	1.79 [b] (0.70)	2.54 [a b c d] (0.91)	1.98 [c] (0.67)	1.74 [d] (0.58)
Work with underserved populations	1.60 [a] (0.67)	1.66 [b] (0.53)	2.37 [a b c d] (0.79)	1.91 [c] (0.63)	1.85 [d] (0.63)
Work in IP team	1.57 [a b] (0.56)	1.76 (0.54)	1.92 [a] (0.65)	1.87 [b] (0.58)	1.74 (0.49)

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Regression Analyses

- For each dependent variable we entered the variables in three blocks
- Block 1: Knowledge, attitudes, self-efficacy, and empathy
- Block 2: Dummy codes for the groups with medicine as the referent group
- Block 3: Interactions between predictors and group.
  - No interactions were statistically significant

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Results of Regressions – Location

- Positive attitudes toward IPE predict intentions to work in a **rural** environment ($p = .010$)
- Self-efficacy ($p = .024$) and empathy ($p = .033$) are related to intentions to work in **urban** environments when group membership is *not* included
  - When group membership is included, the difference between pharmacy and the medical students drives the results ($p = .001$)

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Results: Intentions to work with those who can't pay

- After controlling for knowledge (p=.013), self-efficacy (p=.014), attitude (p=.000) and empathy (p=.000), significant group differences exist
  - Largest difference is between pharmacy and medical students (p=.000)

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Results: Intentions to work with the underserved

- After controlling for knowledge (p=.031), self-efficacy (p=.026), attitude (p=.000) and empathy (p=.000), significant group differences exist
  - Differences are between pharmacy and medical students (p=.000) and between PA and medical students (p=.019)

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Results: Intentions to work in IP teams

- No group differences were found
- Attitudes toward IPE (p=.000), self-efficacy (p=.004), and empathy (p=.000) predict intentions to work in interprofessional teams in the future

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Conclusions

- Pharmacy students may differ due to lack of knowledge/experience in working with underserved populations.
- We found that knowledge, attitudes, self-efficacy and empathy were related to students' self-reported intentions
  - Training and experiences that are designed to improve knowledge, attitudes, self-efficacy, and empathy may lead to greater intentions for working with underserved populations
- Our future work is designed to tease out these long term associations
  - Need to consider previous experience in volunteering, IP teamwork, and prior knowledge about working with underserved populations

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Thank you!

We welcome any comments or questions:

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Regression Analyses (1)

DV	Variables in model	R^2_{change}	$F_{change}(df_1, df_2)$	*p*-value
Provide services to those who can't pay	Step 1: attitudes, knowledge, self-efficacy, empathy	0.254	40.85 (4, 481)	0.000
	Step 2: dummy codes for 5 groups	0.057	9.914 (4, 477)	0.000
Work with underserved populations	Step 1: attitudes, knowledge, self-efficacy, empathy	0.272	44.97 (4, 481)	0.000
	Step 2: dummy codes for 5 groups	0.049	8.54 (4, 477)	0.000
Work in interprofessional team	Step 1: attitudes, knowledge, self-efficacy, empathy	0.357	66.76 (4, 481)	0.000
	Step 2: dummy codes for 5 groups	0.006	1.11 (4, 477)	0.351

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Regression Analyses (2)

DV	Variables in model	R^2_{change}	$F_{change}(df_1, df_2)$	*p*-value
Likely to spend time in rural health setting after graduation	Step 1: attitudes, knowledge, self-efficacy, empathy	0.029	3.559 (4, 480)	0.007
	Step 2: dummy codes for 5 groups	0.003	0.340 (4, 476)	0.851
Likely to spend time in urban health setting after graduation	Step 1: attitudes, knowledge, self-efficacy, empathy	0.040	4.974 (4, 481)	0.001
	Step 2: dummy codes for 5 groups	0.071	9.482 (4, 477)	0.000

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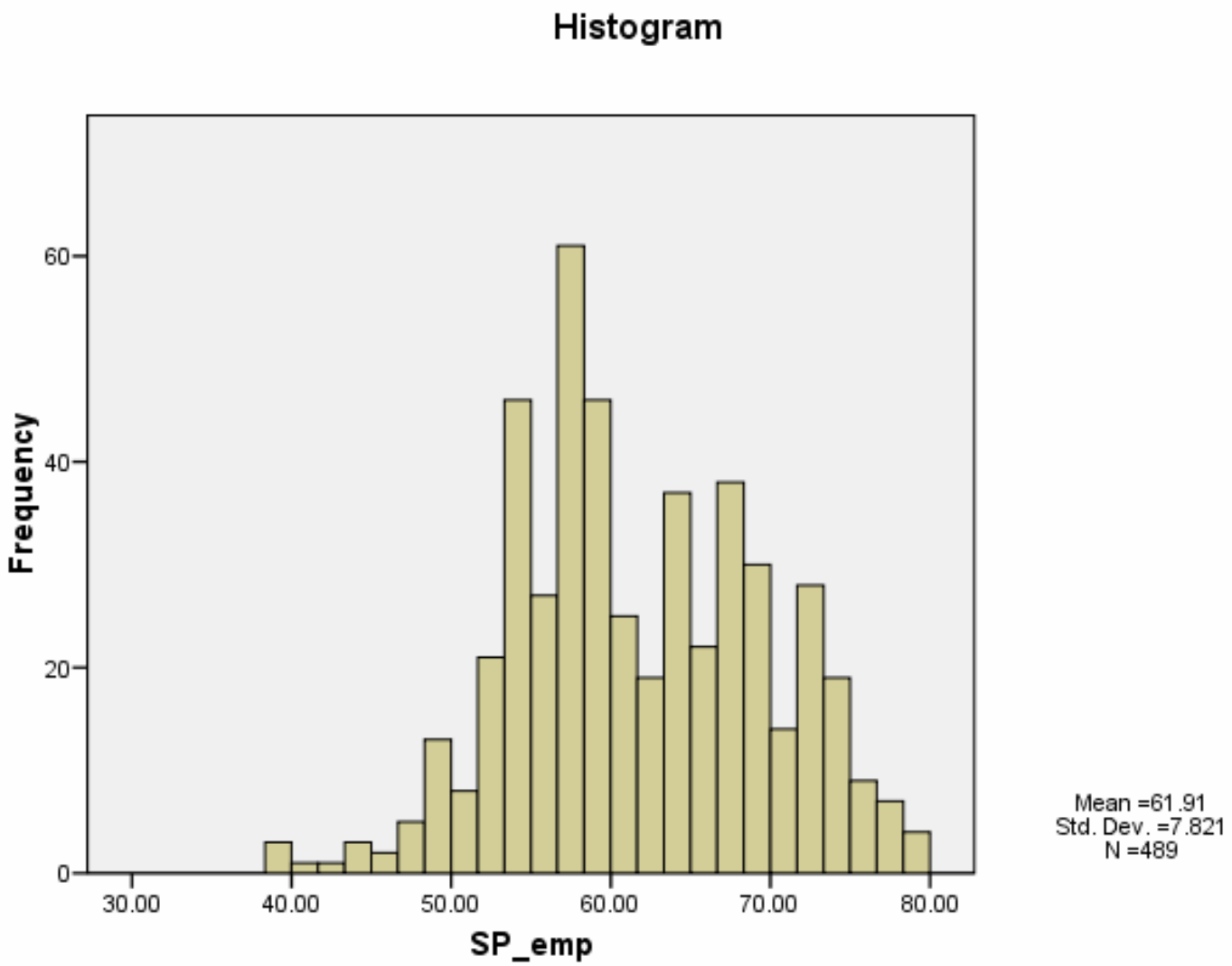
Empathy – histogram (baseline)



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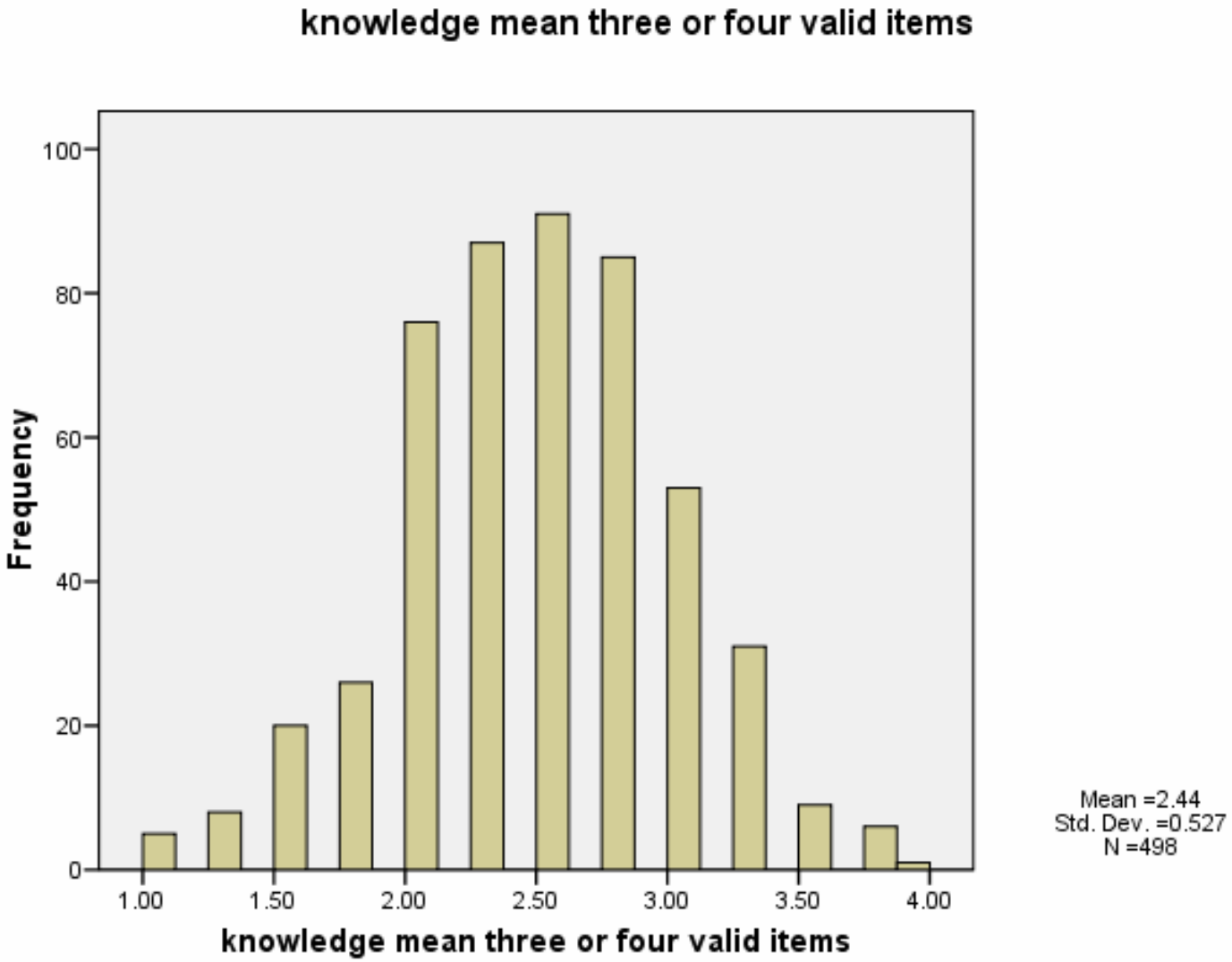
Knowledge - baseline



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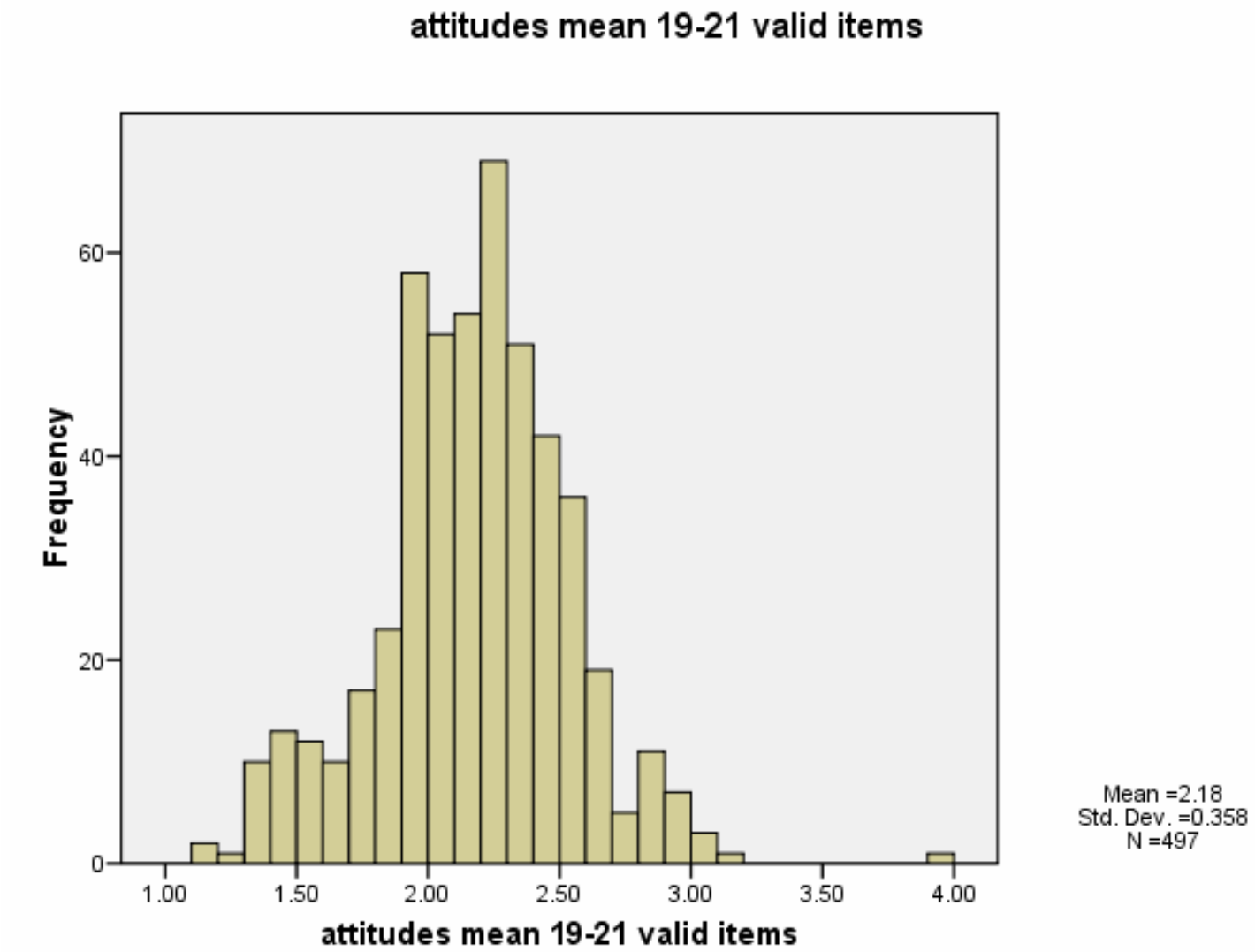
Attitudes towards IPE - baseline



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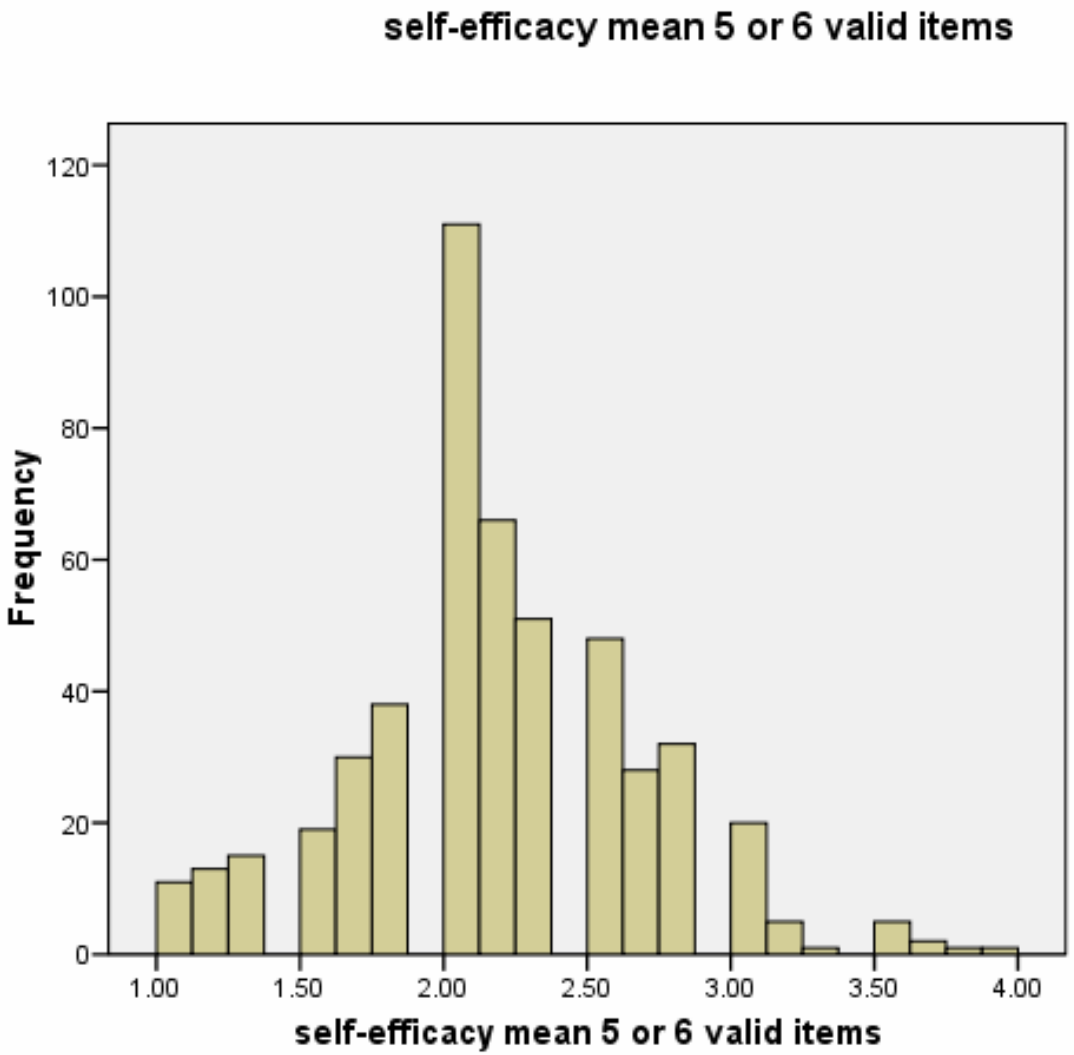
Self-efficacy - baseline



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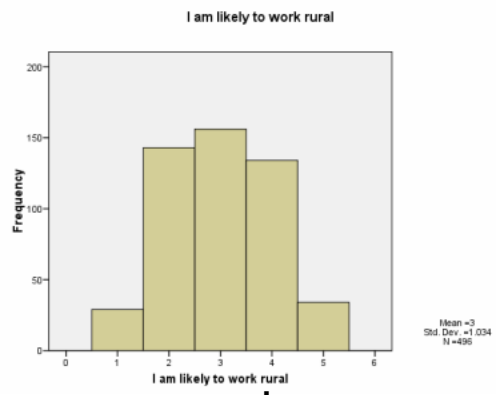
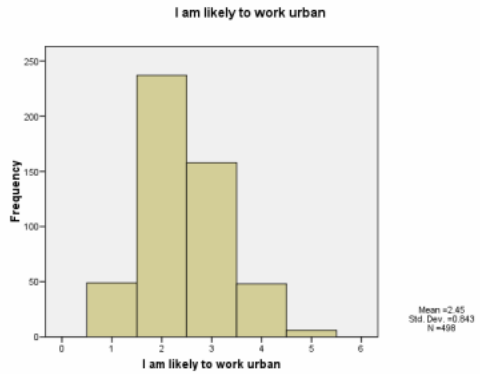
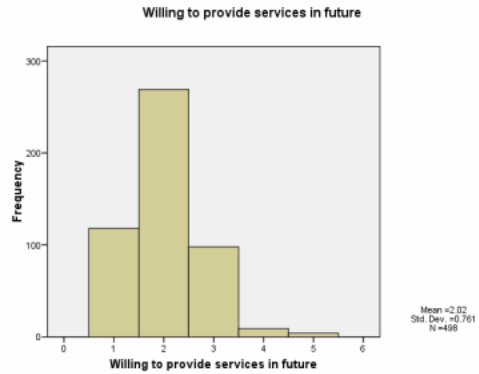
Intentions - baseline



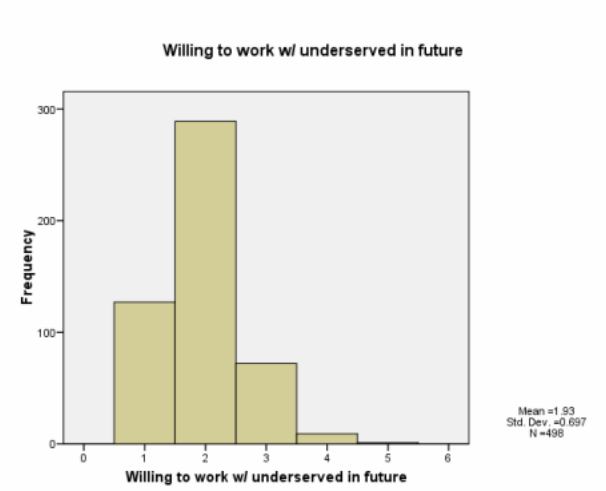
rural



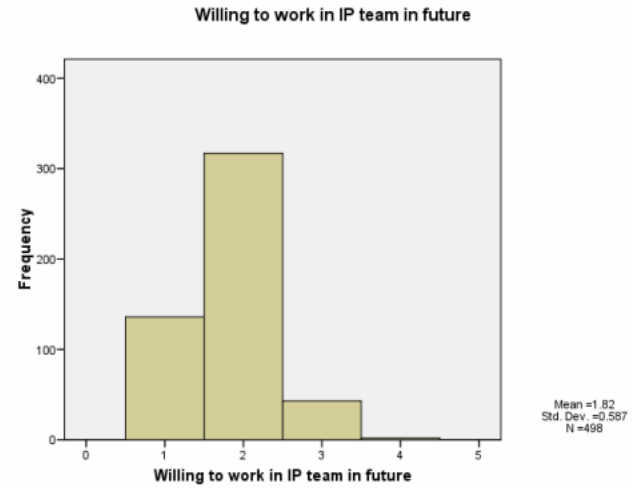
urban



underserved



uninsured



IP teams

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