

**The Poor External Validity
of Health Promotion Research
&
What Can Be Done to Facilitate
Translation of Research To Practice**

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Internal And External Validity of Behavioral Interventions: A Review of Recent Literature

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Planning for Translation and Dissemination: RE-AIMing Interventions to Improve Applicability and Enhance Evaluations

Paul A. Estabrooks, Ph.D.

A Web-Based Resource Center for Program Evaluators and Researchers Concerned with Translating Health Behavior Research to Practice: www.re-aim.org

Russell E. Glasgow, Ph.D.

Conclusions: Cross Cutting Issues and Comments

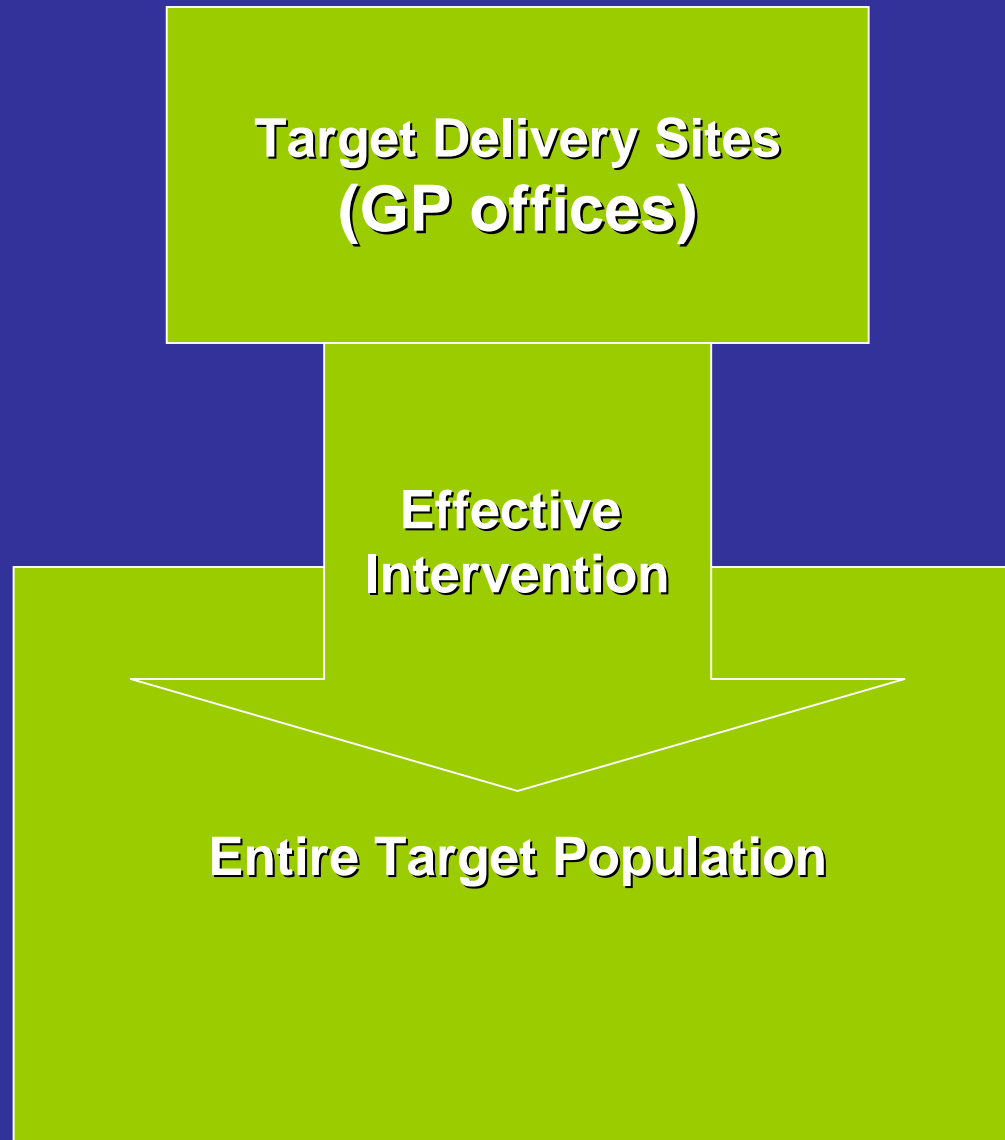
Audience

General Discussion

MORAL OF THE STORY?

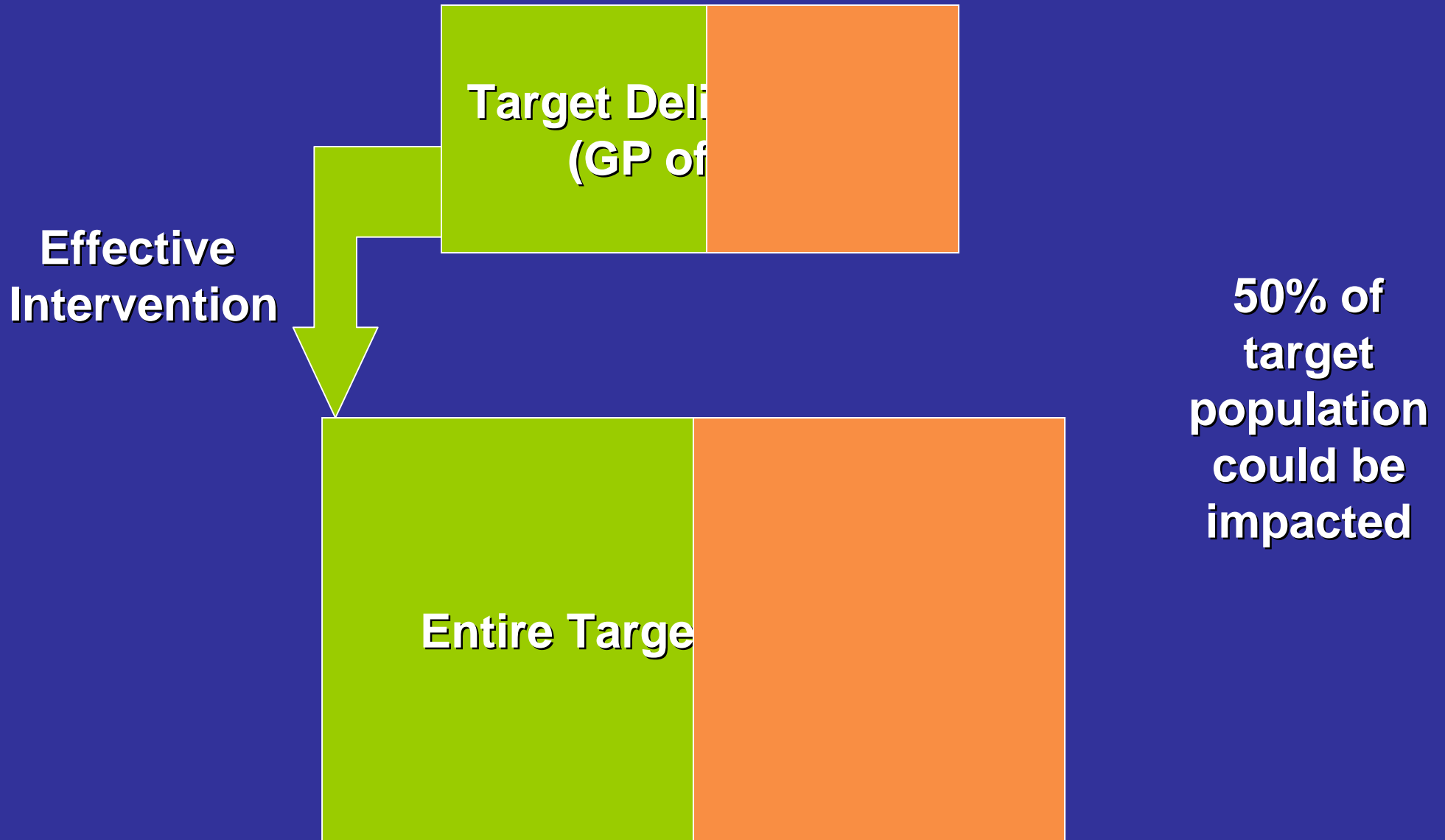
“IT’S THE DENOMINATOR!”

ONCE UPON A TIME...

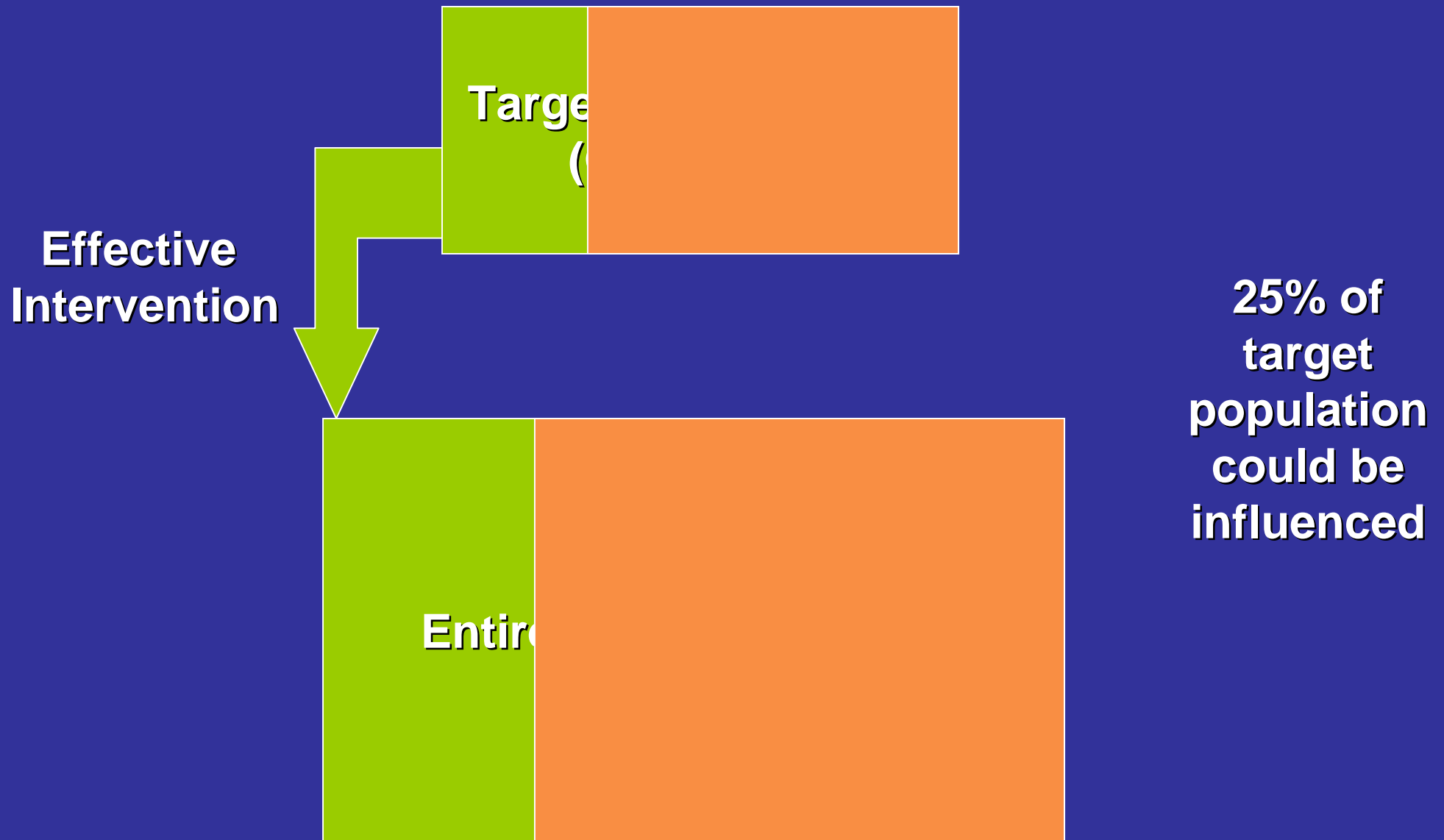


100% of
target
population
could be
influenced

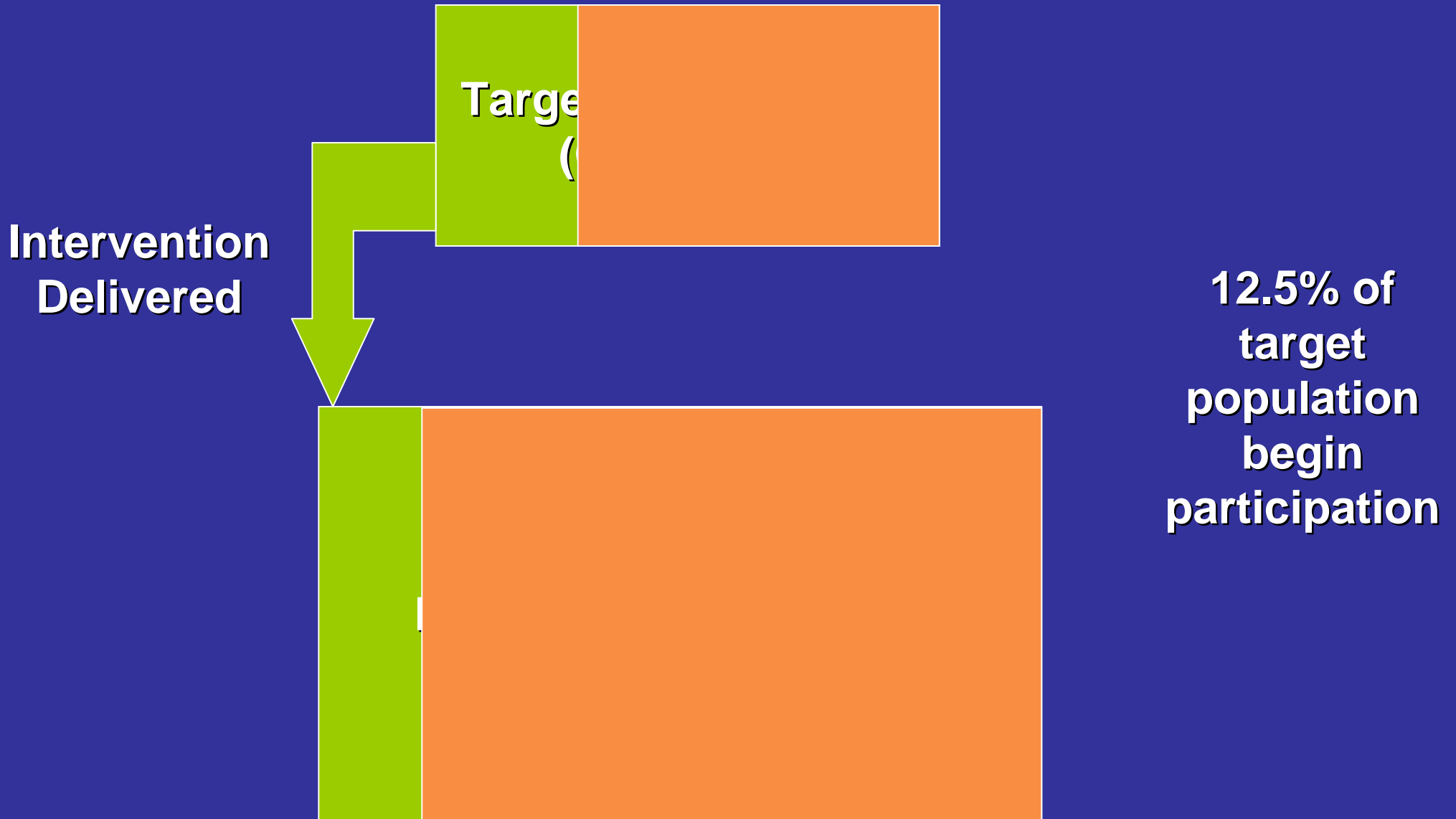
Step 1. 50% of offices agree to participate - **ADOPTION**



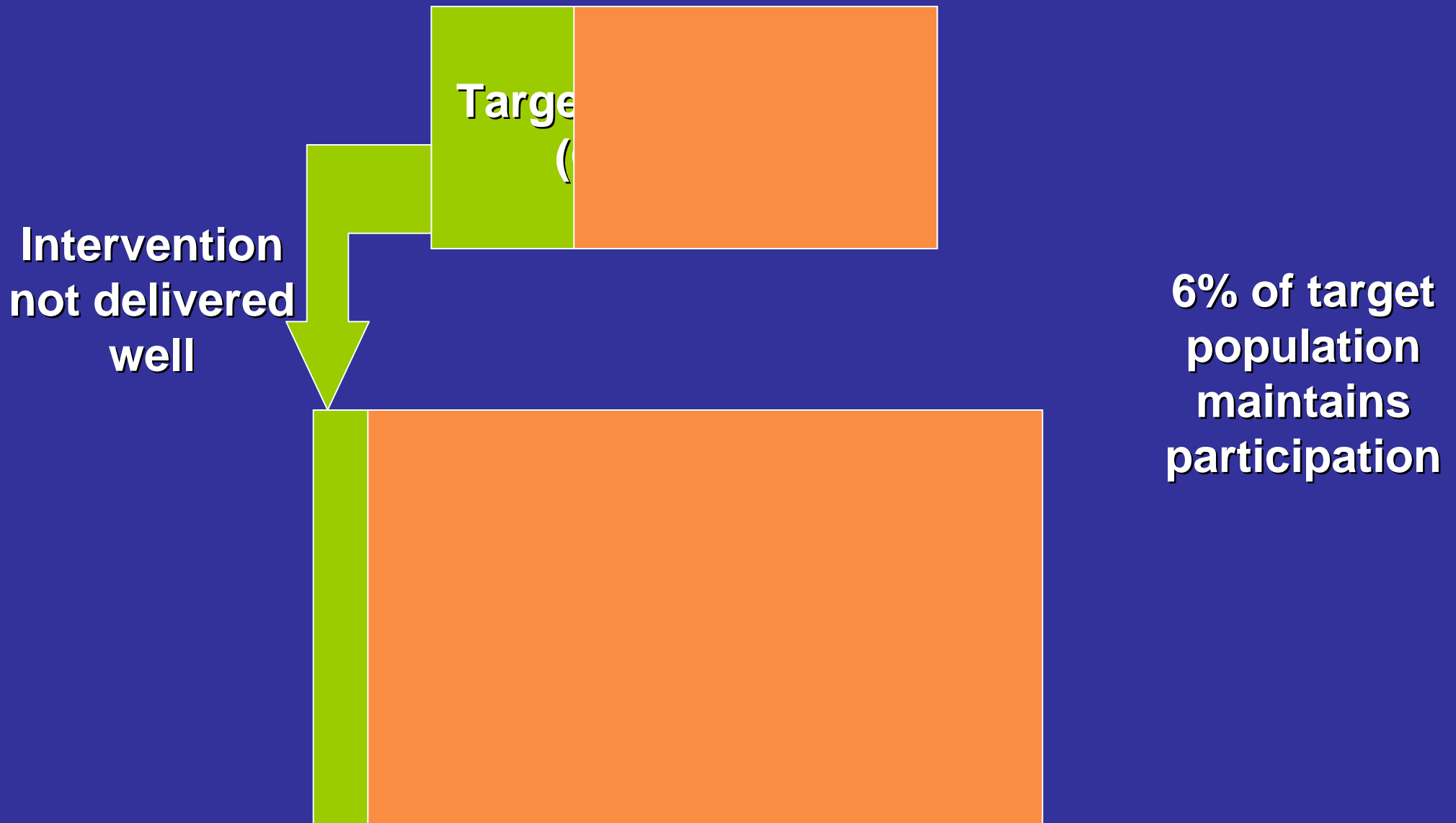
Step 2. 50% of staff – **ADOPTION (Part 2)**



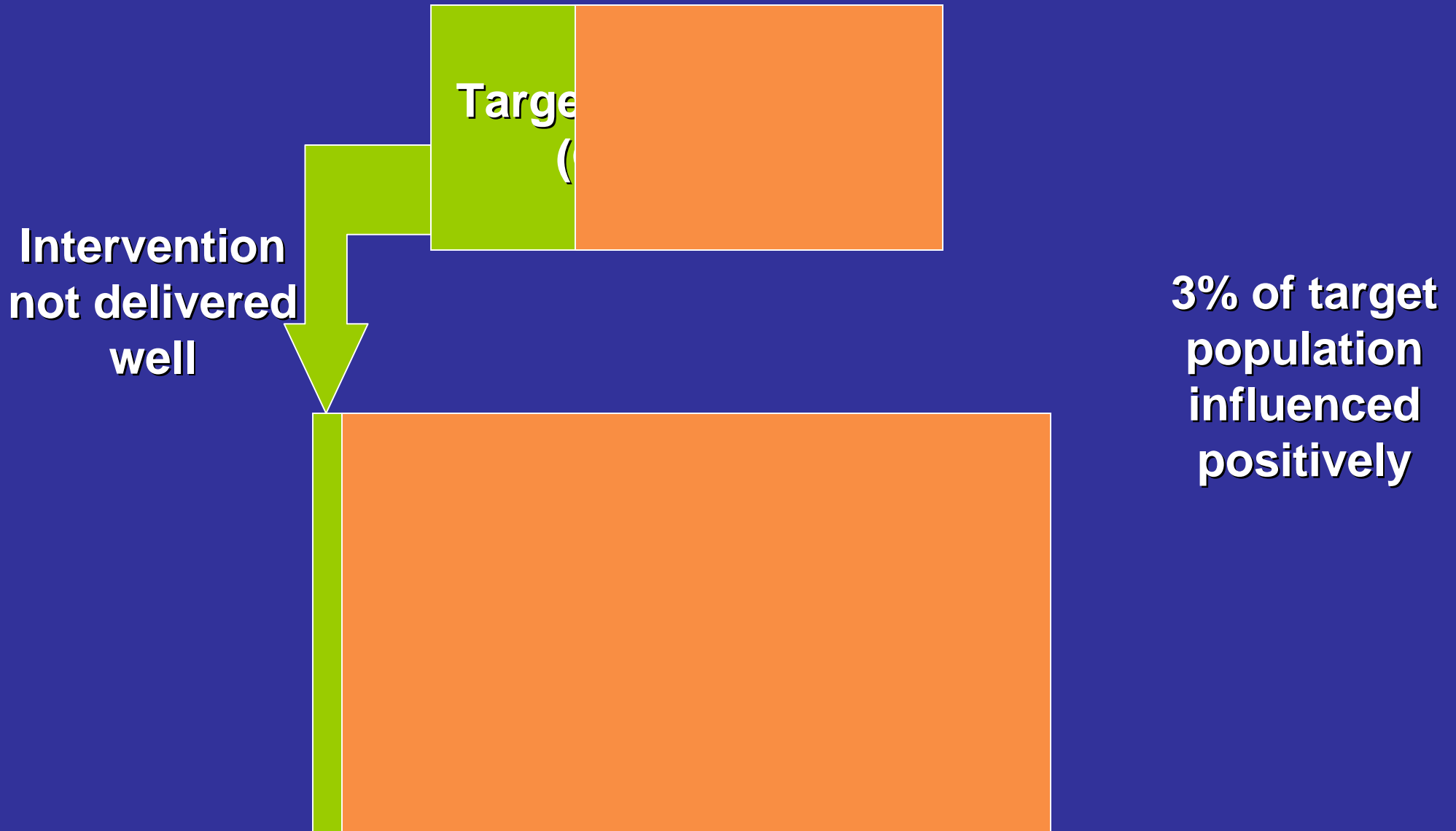
Step 3. 50% of eligible participants - **REACH**



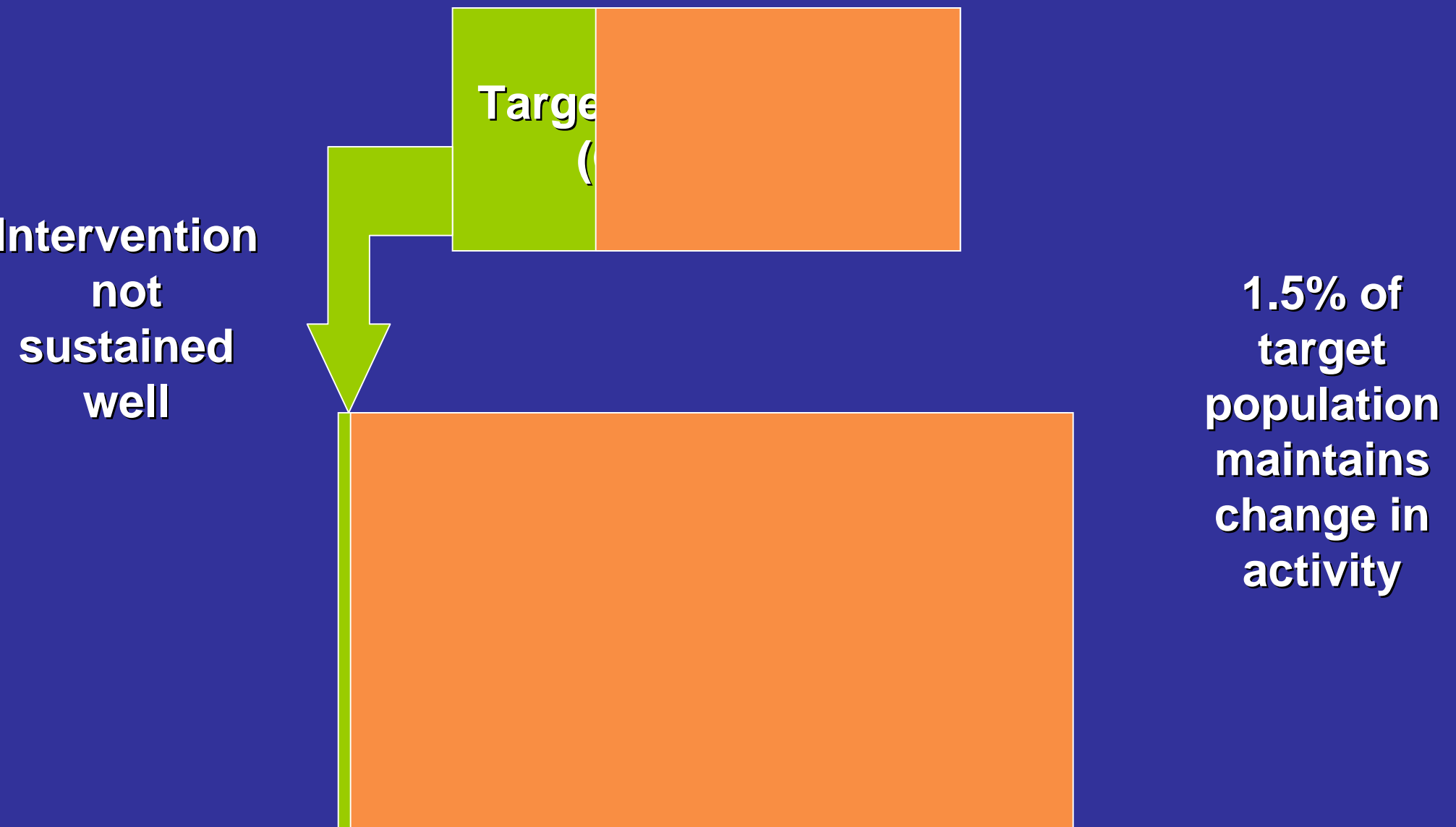
Step 4. 50% of protocol dropped - **IMPLEMENTATION**



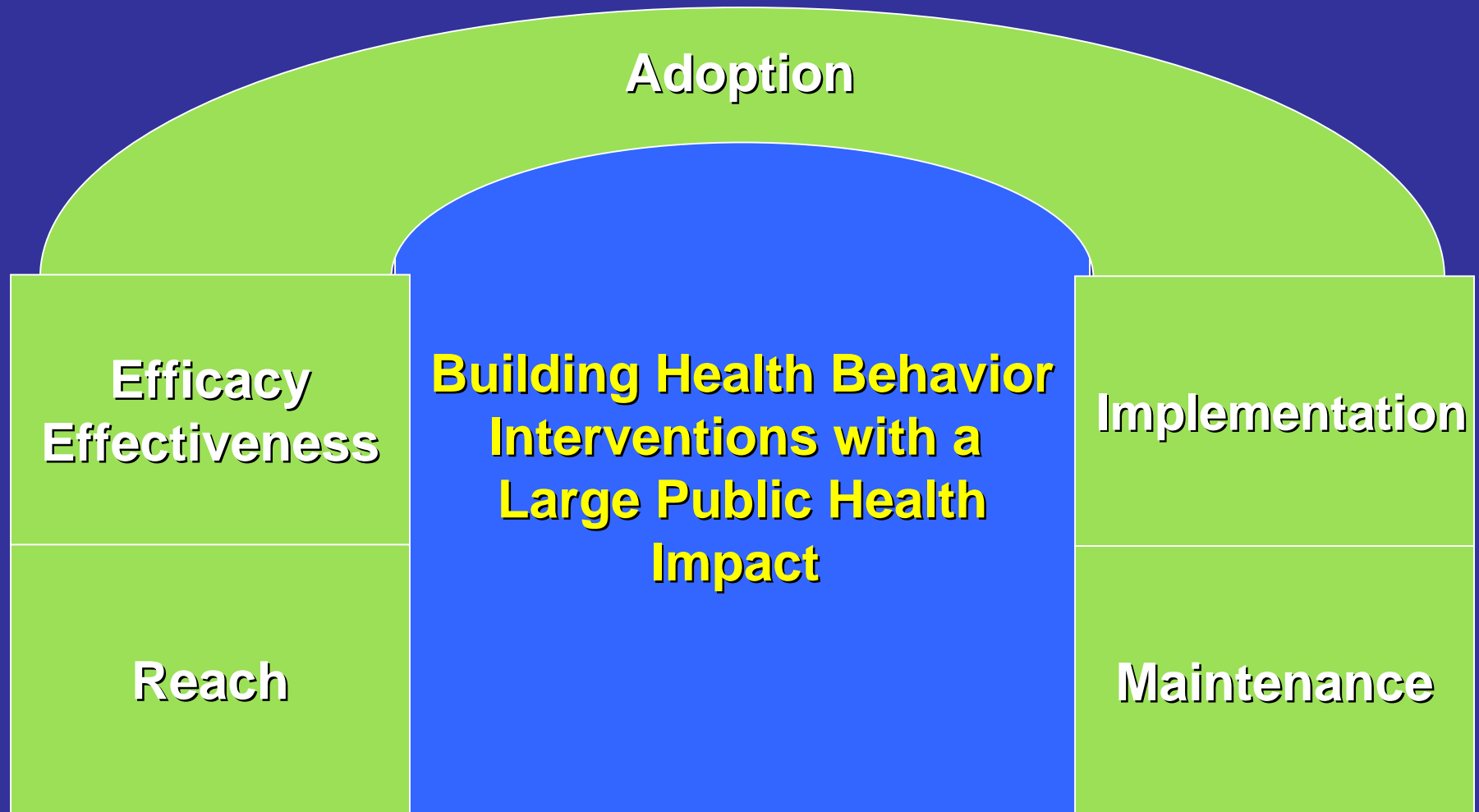
Step 5. 50% of participants achieve goal after 8 weeks - **EFFECTIVENESS**



Step 6. After 2 years 50% of participants maintain change - **MAINTENANCE**



RE-AIM FRAMEWORK





**What is needed to
improve translation of research into
Health Promotion practice?
A review of the literature**

**Sheana Bull, Ph.D., M.P.H.
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Health Sciences Center**

Objectives

- To discuss and summarize four reviews of recent controlled studies in:
 - Worksites
 - Health Care
 - School
 - Community settings
- To present conclusions from reviews regarding current emphasis on internal vs. external validity

Objectives

- **To discuss the opportunities researchers, practitioners, fund agencies, and journal editors have to improve the translation of efficacious and effective interventions into practice**

Background

- **Since the 1960's behavioral medicine and epidemiology have developed ability to identify, explain and address 'risk factors' for disease**
- **Behavioral medicine and epidemiology have also made breakthroughs in development and testing interventions to reduce risk factors**

Background

- While we know a lot about ‘what works’ to reduce risk factors in certain populations, under certain conditions, we know relatively little about how to disseminate ‘what works’ to a wide group of practitioners
- We also know relatively little about whether ‘what works’ works for multiple groups with diverse demographic characteristics

Background

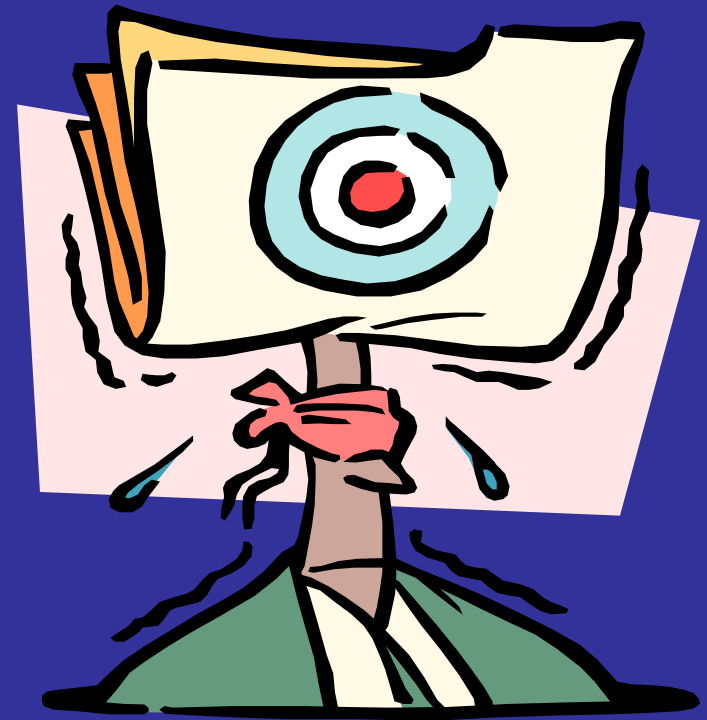
- The standard intervention trial seeks to establish efficacy—this is critical to determining ‘what works’
- Efficacy is insufficient for judging potential effectiveness, reach and sustainability for health promotion
 - Narrowly drawn samples don’t reflect larger population;
 - Tightly controlled interventions don’t encourage flexibility to apply in multiple settings with multiple groups

Background

- **Over reliance on efficacy studies limits our ability to estimate implications of an intervention for public health practice**
- **The RE-AIM Framework is a useful evaluation tool to assess the extent that components critical for dissemination/translation of interventions to public health practice are present in studies**

Background

- Reach
- Efficacy/Effectiveness
- Adoption
- Implementation
- Maintenance



RE-AIM

Methods

- Literature review, using RE-AIM framework to evaluate the potential public health impact of interventions in worksites, health care settings, schools and community settings
- Summarized results of controlled intervention studies reported in one of 12 leading public health journals conducted between 1996-2000

Methods

- Only reviewed health behavior change studies evaluating an intervention with a control condition*
- Reviewed studies as part of the Behavior Change Consortium (BCC) and focused on physical activity, smoking and nutrition
- 119 studies reviewed addressing one or more of these areas

*purposely included controlled studies as well as RCT

Results

- **Dimensions of RE-AIM that are discussed consistently across studies and across behaviors include (n=119):**
 - **Participation rate (76%, 59-88% range)***
 - **Behavioral outcome measure (92%, 67-100% range)**
 - **Attrition rate (79%, 54-100% range)**

***Definition of participation rate varies—sometimes includes only those who call in response to an ad, for example**

PERCENT OF STUDIES REPORTING ON RE-AIM DIMENSIONS Individual Level

RE-AIM Dimension/Measure	Worksites (n=24)	Schools (n=32)	Health Care (n=36)	Community (n=27)	Average
REACH					
Participation rate	88%	59%	69%	88%	76%
Representativeness	9%	7%	28%	11%	14%
EFFECTIVENESS					
Behavioral outcome measure	67%	100%	100%	100%	92%
QOL or negative outcomes	0%	NR	17%	3%	7%
MAINTENANCE					
≥ 6-month follow-up	4%	26%	86%	30%	36%
Attrition at follow-up	54%	74%	87%	100%	79%

Results

- Few studies of the 119 discuss setting reported criteria related to external validity, or the AIM of RE-AIM:
 - A: Participation rate of settings (16%, 11-25% range)
 - I: Consistency of Intervention delivery (46%, 12-77% range)
 - M: Maintenance (2%, 0-6% range)

PERCENT OF STUDIES REPORTING ON RE-AIM DIMENSIONS

Setting Level

RE-AIM Dimension/Measure	Worksites (n=24)	Schools (n=32)	Health Care (n=36)	Community (n=27)	Average
ADOPTION					
Participation rate – site level	25%	15%	11%	11%	16%
Representativeness of settings	0%	0%	0%	7%	2%
IMPLEMENTATION					
Treatment Delivery *	12%	37%	77%	59%	46%
Time or cost	0%	NR	31%	63%	31%
MAINTENANCE					
Setting continuation	4%	0%	6%	0%	2%

* Often from efficacy studies where treatment delivered by research staff

Discussion

- **Recommendations for researchers**
 - **Involve target audience in planning to enhance reach, adoption, implementation and maintenance**
 - **Focus on representation at individual, setting and clinician levels**
 - **Enhance recruitment procedures**
 - **Replicate interventions to assess reach**
 - **Study consistency of implementation in replication and impact on behavioral outcome**

Discussion

- **Recommendations for journal editors/reviewers**
 - **Place equal weight on external as well as internal validity**
 - **Develop a standard for reporting reach, effectiveness, adoption, implementation and maintenance**
 - **Develop a standard for reporting more detail on representation at individual and setting levels at enrollment and follow-up and compare participants to non participants**
 - **Develop a standard for reporting on intervention delivery processes**

Discussion

- **Recommendations for Funding Organizations—solicit proposals that:**
 - **Investigate interventions in multiple settings**
 - **Require standard reporting of exclusions, participation rates (individual and setting levels) and representation of population**
 - **Require a maintenance/sustainability phase and encourage processes for institutionalization of efficacious interventions**
 - **Add potential for translation as review criterion**

Planning for Translation and Dissemination:

RE-AIMing Interventions to Improve Applicability and Enhance Evaluations

Lisa M. Klesges, Ph.D.

University of Tennessee Health Sciences Center

Paul A. Estabrooks

Kansas State University Community Health Institute

Objectives

- Describe design elements related to translation and dissemination that can be incorporated in planning phase of studies
- Early in the planning phase:
 - Encourage researchers and program planners to consider key questions regarding public health impact
 - Anticipate barriers and methods to improve the generalizability, adoption, impact, and sustainability of behavior change interventions

Background

- **Behavior change interventions that are applicable and generalizable to diverse settings and populations are needed to achieve population health goals**
- **Participatory planning methods can facilitate the potential translation of interventions to practice by engaging practitioners, service providers, and community members in the various stages of research planning and execution**

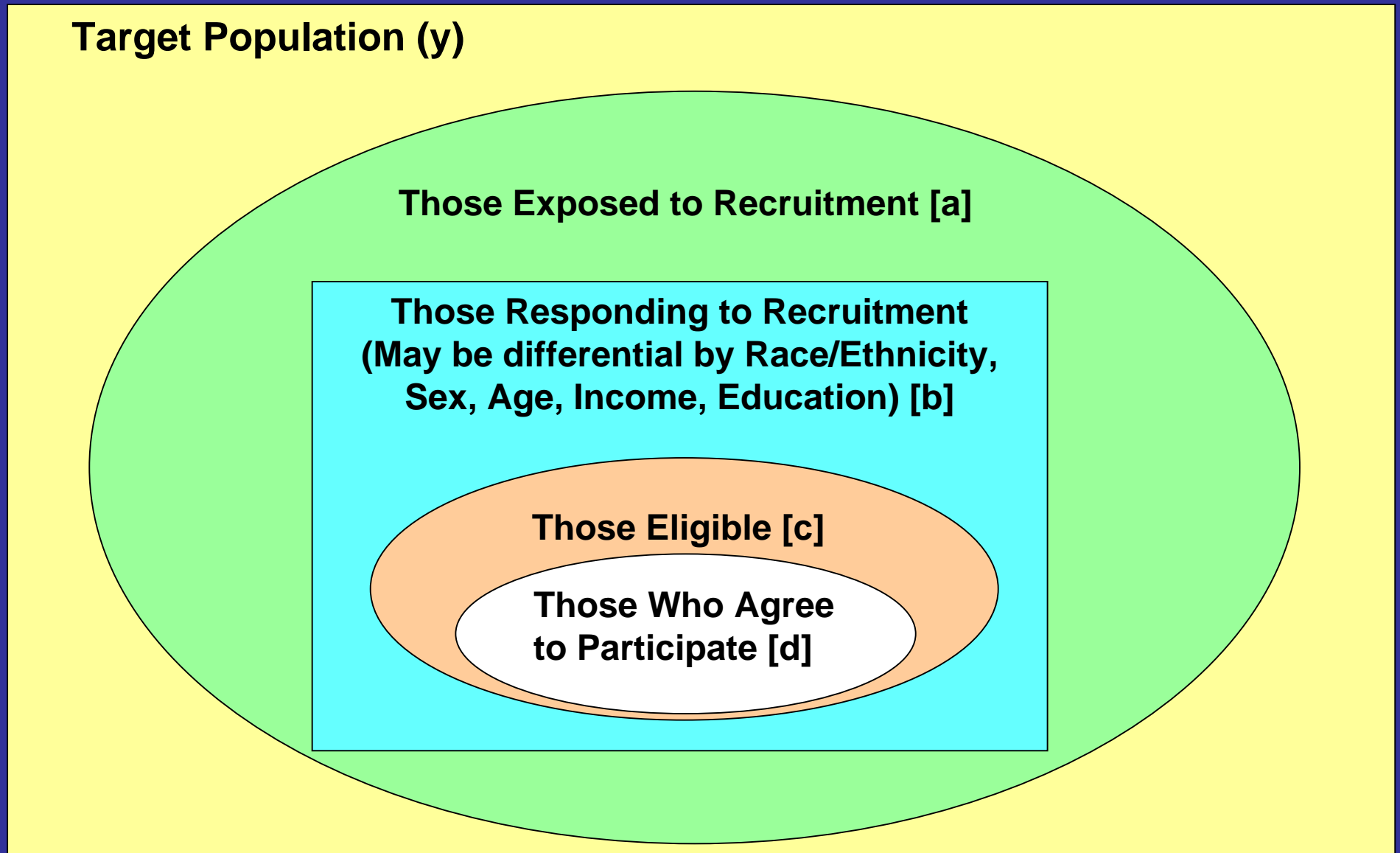
Key Planning Questions



Reaching the targeted population?

- Consider how to include “hard to reach” groups
- Formative evaluation of recruitment strategies and intervention focus
- Assess and reduce barriers to participation
- Plan to assess the representativeness of your sample to evaluate the generalizability of your intervention

Have you reached your intended audience?



Intervention effectiveness in practice?

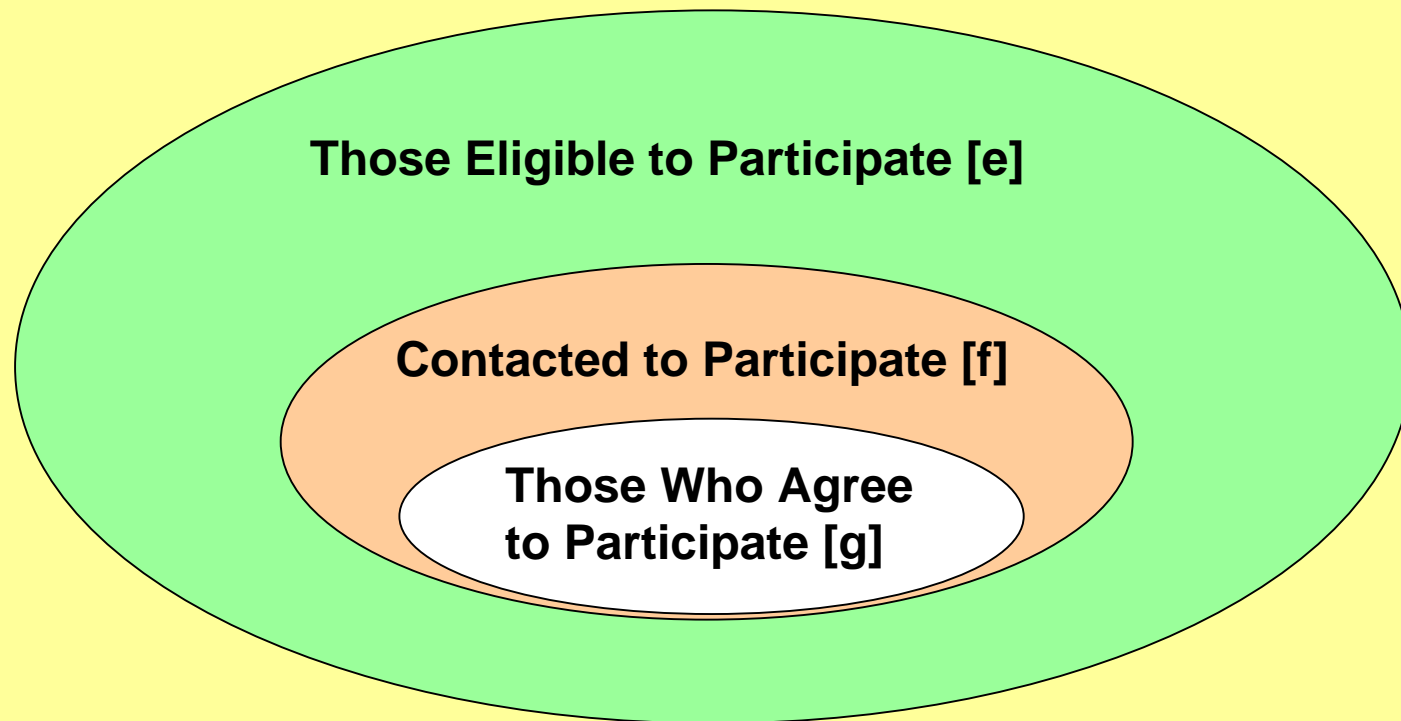
- **Design robust interventions that minimize non-adherence and attrition and maximize effects**
- **Incorporate social and environmental supports to enhance effectiveness**
- **Define broad outcomes e.g., adverse consequences and quality-of-life to estimate “risk-to-benefit” effectiveness**
- **Assess costs of intervention (e.g., materials, equipment, personnel, time, and space) to aid policy decisions and costs analysis**

Wide adoption of intervention?

- Plan to target settings having wide Reach into “hard to find” populations
- Conduct formative evaluation to design interventions that are feasible and attractive to targeted adopters
- Design customization into the intervention
- Assess the representativeness of the targeted settings to judge context and generalizability

Have you reached your intended settings?

Targeted Settings for Adoption (z)



Feasible & Reliable Tx Implementation?

- Test intervention ideas and materials to judge acceptability and value to the target population
- Feasibility studies of the capabilities of delivery agents and preferences of adopting agencies
- Design intervention protocols and training materials for delivery agents with diverse backgrounds & training
- Plan to assess process of intervention delivery

Sustainability of intervention and effects?

- **Consider what will occur after study period ends for both individual maintenance and program sustainability**
- **Build interventions with boosters, follow-up, community linkages to maintain behavior change**
- **Conduct pre-intervention needs assessment w/ organizational and community settings to modify programs to enhance sustainability**

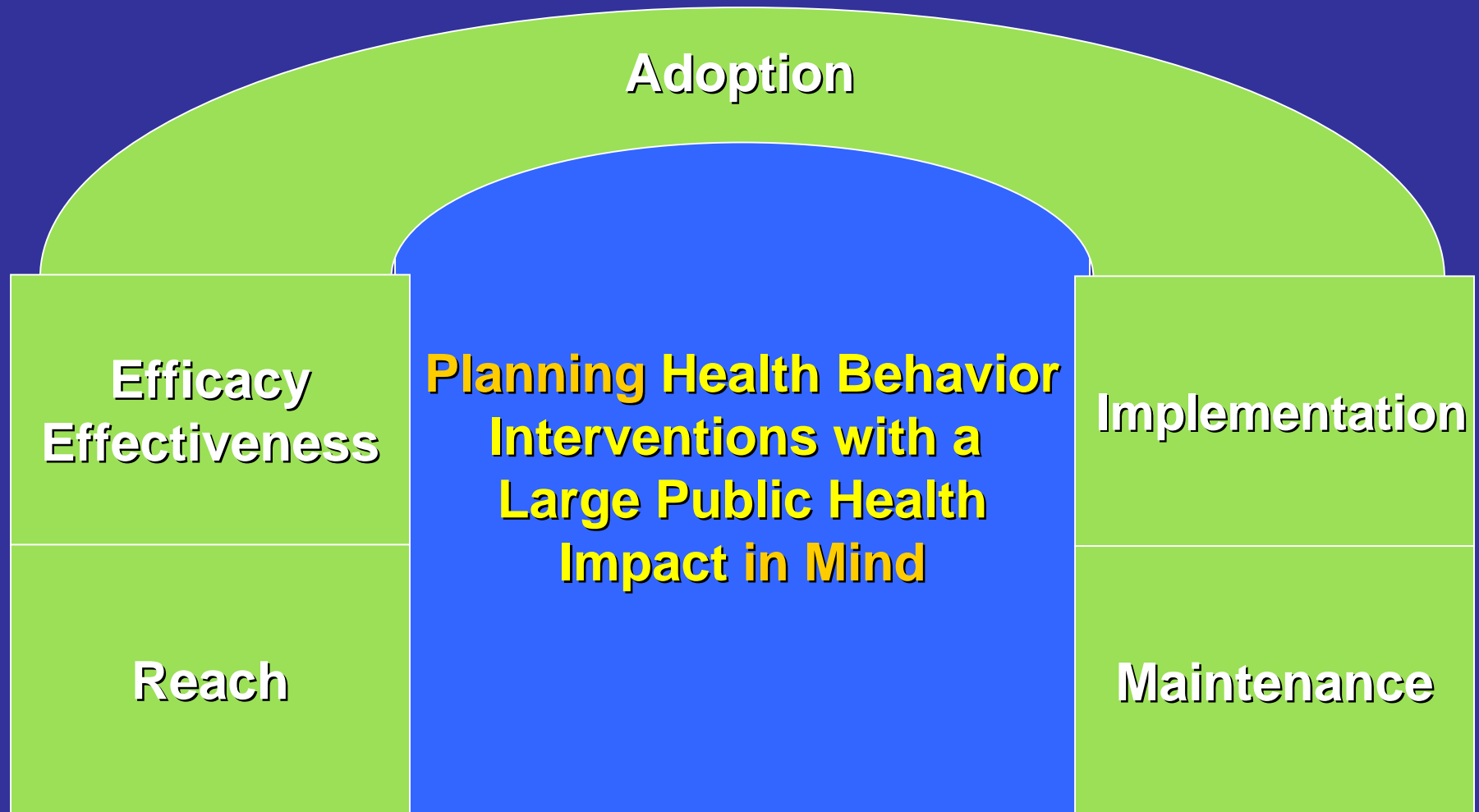
Planning Tools & Resources

- Website (www.reaim.org) to provide detailed information on framework, calculations, and on-line data resources
- Guided assessments to prioritize RE-AIM elements to use in planning
- Future – Menu options and customized approaches within planning framework

RE-AIM Planning Summary

- **Enhance capabilities of researchers and program adopters to plan, implement, and evaluate behavior change interventions with future translation and dissemination in mind**
- **Produce participatory linkages between researchers, program adopters, delivery agents, and communities in planning behavior change interventions with high public health impact**

RE-AIM Planning Goal



A Web-Based Resource Center

www.re-aim.org

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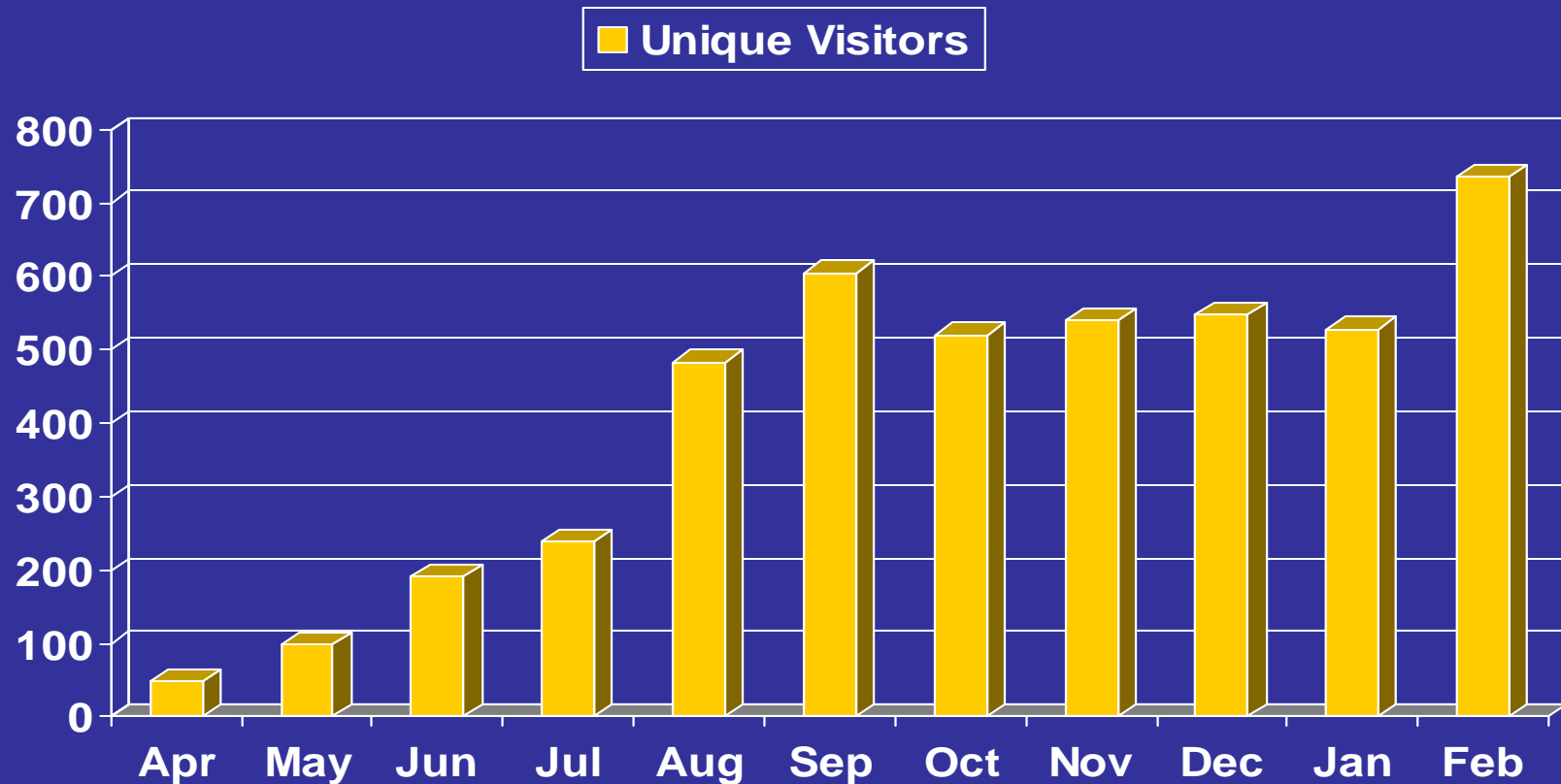


Visits -
Number of visits to your Web site.
Each visit by each visitor is counted, even
if the visitor came to your Web site many times.



Unique Visitors -

Number of individuals who visited your site during the report period. If someone visits more than once, they are counted only the first time they visit.



Average Visitor Minutes

Month	Visitor Minutes
Mar	0
Apr	00:27:53
May	00:21:17
Jun	00:07:51
Jul	00:02:36
Aug	00:22:12
Sep	00:09:43
Oct	00:03:27
Nov	00:08:20
Dec	00:06:27
Jan	00:04:54
Feb	00:27:51

Top Regions in 2002

1.	North America	5,522	85.44%
2.	Western Europe	411	6.36%
3.	Asia	256	3.96%
4.	Australia (AU)	105	1.62%
5.	Middle East	47	0.73%
6.	South America	28	0.43%
7.	Eastern Europe	27	0.42%
8.	Northern Europe	18	0.28%
9.	Region Unspecified	16	0.25%
10.	Pacific Islands	14	0.22%
11.	Region Not Known	12	0.19%
12.	North Africa	3	0.05%

Top States or Provinces in 2002

1.	California	1,394	29.81%
2.	Kansas	1,094	23.40%
3.	Massachusetts	210	4.49%
4.	New York	145	3.10%
5.	Ontario	130	2.78%
6.	Texas	128	2.74%
7.	Colorado	120	2.57%
8.	Maryland	113	2.42%
9.	New Jersey	104	2.22%
10.	Tennessee	101	2.16%
11.	Georgia	89	1.90%
12.	Virginia	88	1.88%
13.	Oregon	71	1.52%
14.	Pennsylvania	68	1.45%
15.	Washington	63	1.35%

Future Developments

- **Online Communities**
- **Interactive Calculators & Comparisons**
 - **Reach**
 - **Effectiveness/Efficacy**
 - **Adoption**
 - **Implementation**
 - **Maintenance**
- **Data sharing**

Conclusions and Comments

**Russell E. Glasgow, Ph.D.
Kaiser Permanente Colorado**

Something may seem okay in theory...

but once put into practice, it just doesn't work.

➤ RE-AIM has been useful in summarizing the literature and identifying research needs

Glasgow RE (1999) Outcomes of and for diabetes education research. *Diab Educ* 25(6) Suppl:74-88.

Noell J, et al (1999) Interactive technology applications for behavioral counseling: Issues and opportunities for health care. *Am J Prev Med* 17:269-274.

Glasgow RE & Eakin EG (2000) Medical office-based interventions. In: FJ Snoek & TC Skinner (Eds) *Psychology in diabetes care*. New York. John Wiley & Sons, pp 141-168.

Eakin EG, et al (2000) Review of primary care-based physical activity intervention studies: Effectiveness and implications for practice and future research. *J Fam Pract* 49(2):158-168.

France EK, et al (2001) Smoking cessation interventions among hospitalized patients: What have we learned? *Prev Med* 32(4):376-388.

Glasgow RE, et al (2002) Making a difference with interactive technology: Considerations in using and evaluating computerized aids for diabetes self-management education. *Diabetes Spectrum* 14(2):99-106.

Eakin EG, et al (2002) Reaching those most in need: A review of diabetes self-management interventions in disadvantaged populations. *Diabetes Metab Res Rev* 18(1):26-35.

Glasgow RE, et al (2002) Behavior change intervention research in health care settings: A review of recent reports, with emphasis on external validity. *Am J Prev Med* 23:62-69.

Estabrooks PA, et al (2003) Reporting of validity from school health promotion studies published in 12 leading journals, 1996-2000. *J School Health* 73:21-28.

Bull SS, et al (In press) Worksite health promotion research: To what extent can we generalize the results and what is needed to translate research to practice? *Health Education and Behavior*.

➤ RE-AIM has been used to help design and evaluate studies

Glasgow RE, et al (2000) A brief smoking cessation intervention for women in low-income Planned Parenthood Clinics. *Am J Pub Health* 90(5):786-789.

Glasgow RE, et al (2000) Brief, computer-assisted diabetes self-management counseling: Effects on behavioral, physiological and quality of life outcomes. *Medical Care* 38:1062-1073.

Lando HA, et al (2002) Promoting smoking abstinence in pregnant and postpartum patients: A comparison of 2 approaches. *Am J Managed Care* 7:685-693.

Glasgow RE, et al (2002) Implementation, generalization, and long-term results of the “Choosing Well” diabetes self-management intervention. *Patient Educ Counseling* 48:115-122.

Toobert DJ, et al (2002) If you build it, will they come? Reach and adoption associated with a comprehensive lifestyle management program for women with type 2 diabetes. *Patient Educ Counseling* 48:99-105.

Toobert DJ, et al (2002) Enhancing support for health behavior change among women at risk for heart disease: The Mediterranean Lifestyle Trial. *Health Educ Res* 17:547-585.

Estabrooks PA, et al (2003) Evaluating the impact of behavioral interventions that target physical activity: Issues of generalizability and public health. *Psychol Sport Exerc* 4:41-55.

Estabrooks, PA, et al (in press). The relationship between delivery agents' physical activity level and the likelihood of implementing a physical activity program. *Am J of Health Promo*.

Glasgow RE, et al (In press) The D-Net diabetes self-management program: Long-term implementation, outcomes, and generalization results. *Prev Med*

- **Will RE-AIM be useful for program planning and for quality improvement efforts?**
 - **Can it be communicated so is understandable to non-researchers?**
 - **Can it provide effective solutions to concerns identified?**

- **The RE-AIM website appears used, but:**
 - ✓ **Will it be useful for planners and decision makers?**
 - ✓ **Can it help create a Network of Innovators?**
 - ✓ **Are there other or better avenues?**

- **Does the RE-AIM model need modification or refinement?**