

CORRESPONDENCE AND CONVERGENCE IN BENEFIT
TRANSFER ACCURACY: META-ANALYTIC REVIEW
OF THE LITERATURE

1. INTRODUCTION

Benefit transfer is the adaptation of existing information or data to new contexts. Benefit transfer has become a practical way to inform decisions when primary data collection is not feasible due to budget and time constraints, or when expected marginal payoffs from primary data collection are small. Primary research is conducted to address valuation needs for a specific resource, in space and time, while benefit transfer uses existing information about similar resources and conditions. Traditionally, the context of primary research is referred to as the study site, and the benefit transfer context is referred to as the policy site. Benefit transfers include two general approaches: value transfers and function transfers. Value transfers are the use of point estimates of value or range of point estimates of value. Function transfers entail the adjustment of a valuation (benefit or demand) function from a study site to characteristics of the policy site. The degree of correspondence between the study site and the policy site determines the validity of a benefit transfer.

Benefit transfer is potentially a very important tool for policy makers since it can be used to estimate the benefits of a study site, based on existing research, for considerably less time and expense than a new primary study (see, for example, *Water Resources Research* 28(3) (1992), and Krupnick (1993) for a discussion of the concept of benefit transfer and Brookshire and Neill (1992) and Desvousges, Johnson and Banzhaf (1998) for reviews of the issues and problems involved with benefit transfer). The primary obstacle to realizing this potential is developing an accepted framework for assessing the magnitude of error, termed generalization error, involved in benefit transfer (Rosenberger and Loomis 2003; Smith and Pattanayak 2002).

Generalization errors arise when estimates from study sites are adapted to policy sites. These errors are inversely related to the degree of correspondence between the study site and the policy site. Validity measures have been used in past studies to test for the accuracy of benefit transfers (Table 1). These measures specify the difference between the known value for a policy site¹ and a transferred value to the policy site. Little research has been conducted on the relationship between these measures and the factors that affect them. These factors include the quality and robustness of the study site data, the methods used in modeling and interpreting the study site data, analysts' judgments regarding the treatment of study site data and questionnaire development, other errors in the original study, and the physical

Table 1. Summary of Benefit Transfer Validity Tests

Reference	Resource/Activity	Value transfer percent error ^a	Function transfer percent error ^a
Loomis (1992)	Recreation	4–39	1–18
Parsons and Kealy (1994)	Water\Recreation	4–34	1–75
Loomis et al. (1995)	Recreation		
Nonlinear Least Squares Model		—	1–475
Heckman Model		—	1–113
Bergland et al. (1995)	Water quality	25–45	18–41
Downing and Ozuna (1996)	Fishing	0–577	—
Kirchhoff et al. (1997)	Rafting	36–56	87–210
	Birdwatching	35–69	2–35
Kirchhoff (1998)	Recreation/Habitat		
Benefit Function Transfer		—	2–475
Meta-analysis Transfer		—	3–7028
Brouwer and Spaninks (1999)	Biodiversity	27–36	22–40
Morrison and Bennett (2000)	Wetlands	4–191	—
Rosenberger and Loomis (2000a)	Recreation	—	0–319
VandenBerg et al. (2001)	Water quality		
Individual Sites		1–239	0–298
Pooled Data		0–105	1–56
Shrestha and Loomis (2001)	International Recreation	—	1–81

Adapted from and expanded on Brouwer (2000).

^aAll percent errors are reported as absolute values.

characteristic, attribute, and market correspondence between the study site and the policy site (Bergland, Magnussen, and Navrud 1995; Boyle and Bergstrom 1992; Brouwer 2000; Desvousges, Naughton and Parsons 1992). Protocols for conducting benefit transfers have been suggested as an attempt to minimize the effect of these factors on benefit transfer error (Rosenberger and Loomis 2001; 2003).

This chapter identifies and discusses an implicit assumption necessary for conducting benefit transfers. The primary assumption is the existence of a meta-valuation function from which values for specific issues can be inferred. The validity or accuracy of benefit transfers depends on the robustness and stability of this valuation function, and the degree of information existing for a specific issue. Secondary assumptions include the ability to capture differences between the study site context and the policy site context through a price vector. This assumption is that the multi-dimensionality of site characteristics is reducible to a single dimension price variable (Downing and Ozuna 1996; Smith, Van Houtven and Pattanayak 2002). A tertiary assumption is that values are stable over time, or vary in a systematic fashion that is captured in a price deflator index (Eiswerth and Shaw 1997).

We posit a meta-valuation function to address the first assumption. The second and third assumptions are indirectly addressed as we provide an overview of the