

## Corrigendum

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## Corrigendum

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Volume 44, Number 2 (1988), in the article "A Foundation of Location Theory: Consumer Preference and Demand," by Marcus Berliant and Thijs ten Raa, pages 336-353: We claim (Lemma 3) that any open set in Euclidean space has null boundary. John H. Boyd III pointed out to us that the claim is false. Take the unit interval,  $[0, 1]$ , and enumerate the rational numbers,  $\{q_k\}_{k=1}^{\infty}$ . Counterexample to the claim is  $A = \bigcup_{k=1}^{\infty} B(q_k, r_k)$ , where radii  $r_k > 0$  vanish sufficiently rapidly. Since  $A$  is dense,  $A \cup \partial A = [0, 1]$  and, therefore,

$$m(\partial A) \geq 1 - m(A) \geq 1 - \sum_{k=1}^{\infty} m[B(q_k, r_k)] \geq 1 - \sum_{k=1}^{\infty} 2r_k,$$

which can be made as close to the full measure (one) as desired, by choice of radii  $r_k$ . Thus, in fact,  $m(\partial A)$  may attain any measure.

The only occasion on which we invoked Lemma 3 is the proof of our main result, the existence of demand for land, namely, the demonstration that the set

$$[B \cup (C \setminus S)]^0 \setminus B$$

has measure zero. We refer to the proof of Theorem 1, but the only pertinent facts are that  $B \cap C = \emptyset$  and  $S$  is a dense subset of  $C$ . Fortunately, the proof can be repaired. In fact, the above set is empty.

Suppose, to the contrary, that some element  $x$  belongs to the above set. Then it has an open neighborhood,

$$N_x \subset [B \cup (C \setminus S)]^0.$$

By Lemma 2, using  $x \notin B$  and  $S$  dense in  $C$ ,

$$x \in \partial(C \setminus S).$$

Hence  $N_x$  contains a  $c \in C \setminus S$ .  $N_x$  is also an open neighborhood of  $c \in C$  and  $S$  is dense in  $C$ . Hence  $N_x$  contains an  $s \in S$ . Since  $N_x \subset B \cup (C \setminus S)$ , we have that member  $s \in B$ . It follows that

$$s \in B \cap S \subset B \cap C,$$

contradicting the emptiness of the latter set. Hence  $x$  cannot exist, completing the proof of the emptiness of  $[B \cup (C \setminus S)]^0 \setminus B$ .

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