Towards a Baranyai theorem with additional condition

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Baranyai's theorem states that if k divides n then there are $\binom{n-1}{k-1}$ partitions of the n-element set into k-element subsets in such a way that every k-element subset occurs in exactly one of these partitions. However nothing is known about the pairwise relation of the partitions. We will show some results moving in this direction. The objects considered here will be families of ℓ pairwise disjoint k-element sets rather than partitions (one can call them partial partitions). We say that two partial partitions are far if there are no two pairs of classes in these partitions with pairwise intersection more than $k/2$. It is proved that if n is large, one can find such partial partitions far from each other in such a way that every k-element subset, with a few (bounded number) exceptions, is in one of them exactly once.