2. Another relevant aspect is the result of Riehl-Verity [10] about adjoint functor between quasicategories. Indeed, since we know that QS-objects also model $(\infty, 1)$-categories, we have two two implication for a map $\sigma : \mathcal{F} \longrightarrow \mathcal{G}$ between QS-objects:

   – If the source σ_0 is an adjoint of quasicategories in the sense of Joyal-Lurie, then the target σ_1 should be a *coherent adjoint* between simplicial categories.

   – Conversely if σ_1 is part of a homotopy coherent adjunction, then σ_0 should be an adjoint between quasicategories.

   The result of Riehl-Verity says this indeed the case.

Environment: We fix a combinatorial and left proper model category $\mathscr{M}$. We also fix a functor $\mathcal{U} : \mathfrak{A} \longrightarrow \mathscr{M}$ that is a right adjoint between locally presentable categories. In [1], we also required $\mathcal{U}$ to be faithful, but this is not necessary. We need the faithfulness when we want to have an embedding $\mathfrak{A} \hookrightarrow (\mathscr{M} \downarrow \mathcal{U})$.

Let's recall the definition of our objects of study.

Definition 1.1. *Let $\mathscr{M}$ and $\mathcal{U}$ be as above.*

1. *Define the category $\mathscr{M}_{\mathcal{U}}[\mathfrak{A}]$ of all $\mathcal{U}$-preobjects to be the comma category $(\mathscr{M} \downarrow \mathcal{U})$.*

2. *Define the category of Quillen-Segal $\mathcal{U}$-objects, henceforth $\mathcal{U}$-QS-objects, to be the full subcategory $(\mathscr{W} \downarrow \mathcal{U}) \subseteq (\mathscr{M} \downarrow \mathcal{U})$, where $\mathscr{W} \subseteq \mathscr{M}$ is the subcategory of weak equivalences. We will denote this category by $\mathscr{W}_{\mathcal{U}}[\mathfrak{A}]$.*

The main theorem in [1] is the content of [1, Theorem 8.2]. We summarize the relevant information hereafter.

Theorem 1.2. *Let $\mathscr{M}$ be combinatorial and left proper model category. Let $\mathcal{U} : \mathfrak{A} \longrightarrow \mathscr{M}$ be a right adjoint between locally presentable categories. Then the following hold.*

1. *There are two combinatorial model structures on $\mathscr{M}_{\mathcal{U}}[\mathfrak{A}]$, denoted by $\mathscr{M}_{\mathcal{U}}[\mathfrak{A}]_e^{\mathbf{c}}$ and $\mathscr{M}_{\mathcal{U}}[\mathfrak{A}]_{e+}^{\mathbf{c}}$. Both are left proper and the identity gives a Quillen equivalence:*

$$\mathscr{M}_{\mathcal{U}}[\mathfrak{A}]_e^{\mathbf{c}} \longrightarrow \mathscr{M}_{\mathcal{U}}[\mathfrak{A}]_{e+}^{\mathbf{c}} .$$

2. *In the model category $\mathscr{M}_{\mathcal{U}}[\mathfrak{A}]_{e+}^{\mathbf{c}}$, any fibrant object $\mathcal{F} : s(\mathcal{F}) \longrightarrow \underbrace{t(\mathcal{F})}_{=\mathcal{U}(b)}$ has the following properties.*

   – *$s(\mathcal{F})$ is fibrant in $\mathscr{M}$;*

   – *The map $\mathcal{F}$ itself is a trivial fibration in $\mathscr{M}$. In particular, if $t(\mathcal{F})$ is cofibrant in $\mathscr{M}$, then there is a generic weak* 'Voevodsky section' *$\pi : t(\mathcal{F}) \longrightarrow s(\mathcal{F})$ that is also a weak equivalence.*